No. 771,539. PATENTED OCT. 4, 1904.

T. F. DOYLE & W. E. TICE.

MEANS FOR APPLYING SAND TO TRACKS.

APPLICATION FILED FEB. 19, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

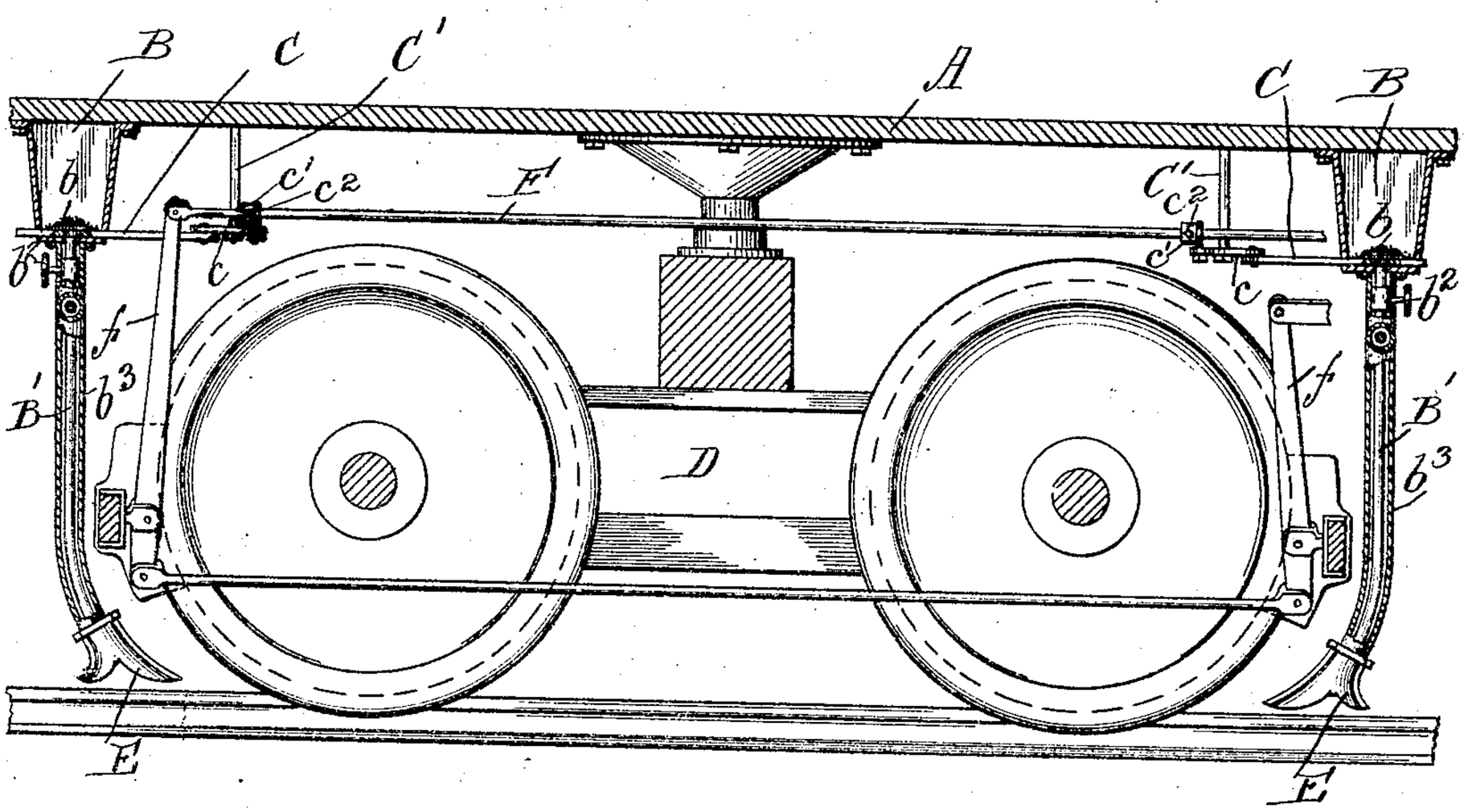


Fig. 3

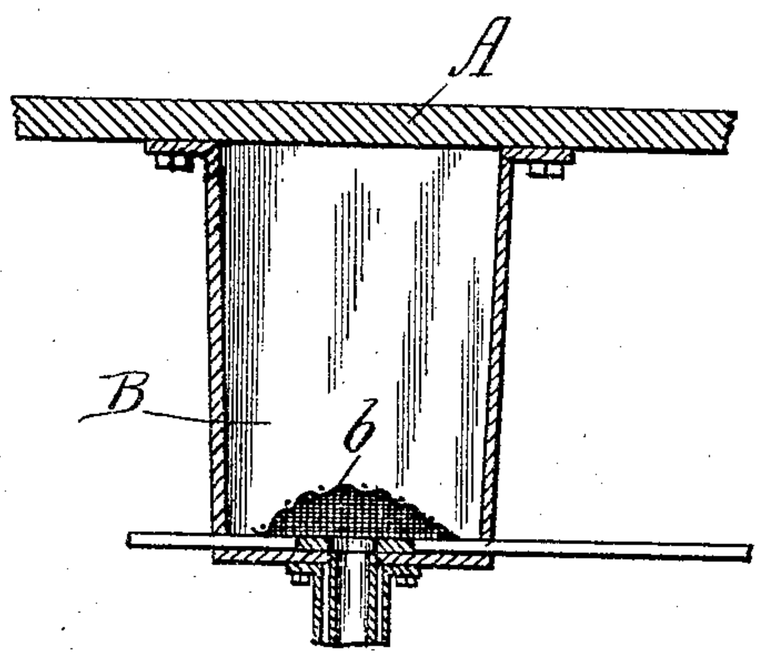
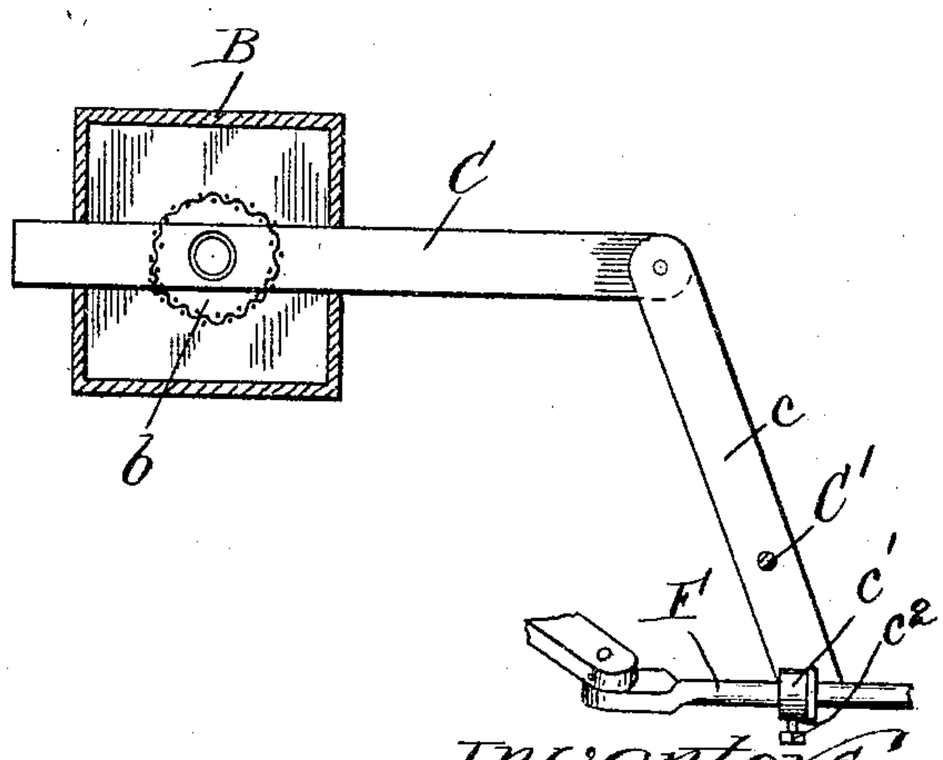


Fig. 4.



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William E. Tice,
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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

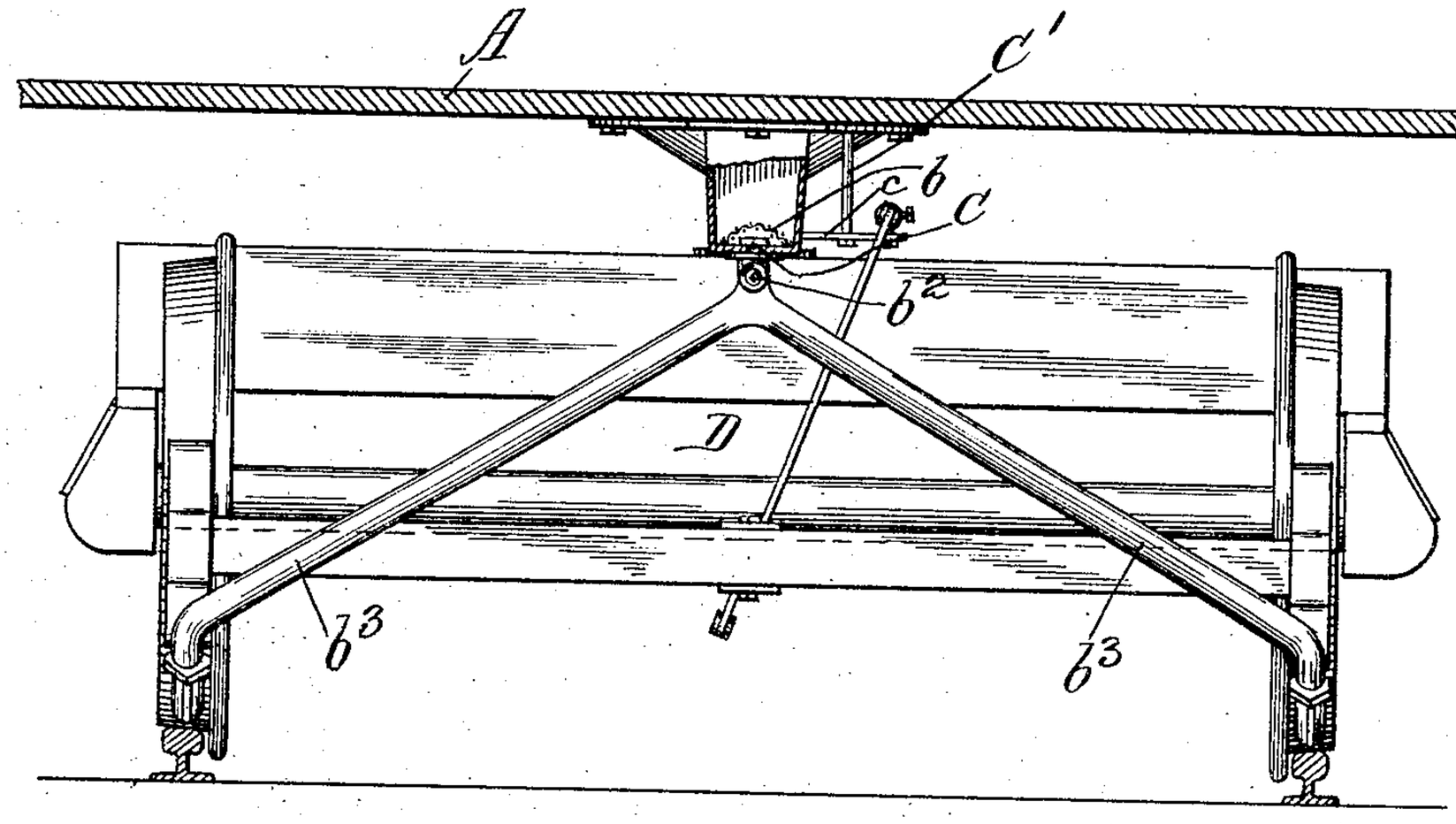


Fig. 5

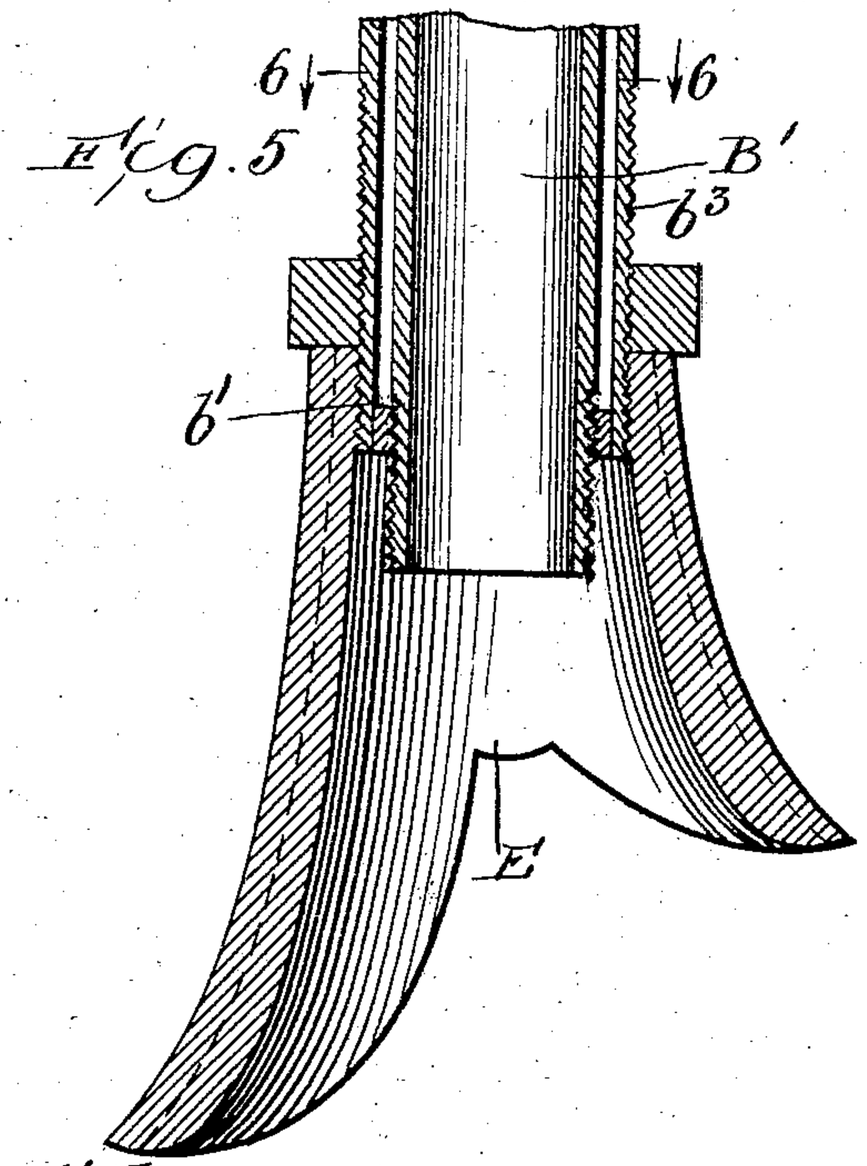
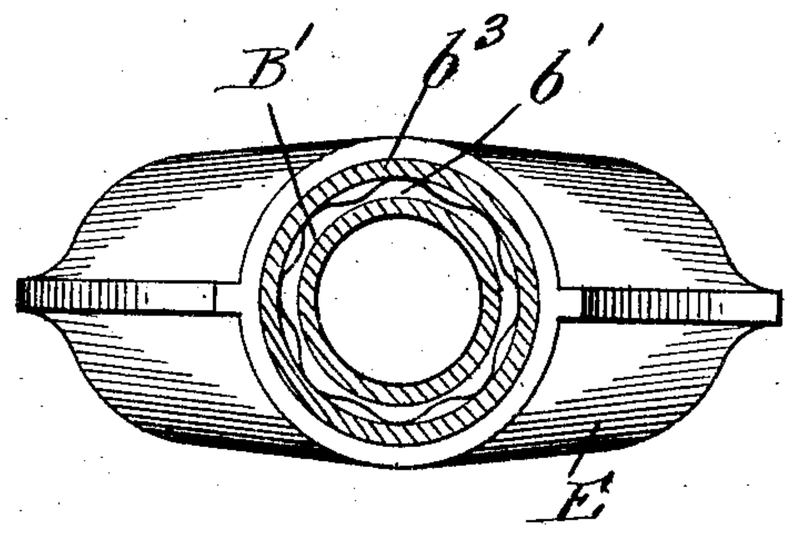


Fig. 6



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UNITED STATES PATENT OFFICE.

THOMAS F. DOYLE AND WILLIAM E. TICE, OF CHICAGO, ILLINOIS.

MEANS FOR APPLYING SAND TO TRACKS.

SPECIFICATION forming part of Letters Patent No. 771,539, dated October 4, 1904.

Application filed February 19, 1904. Serial No. 194,420. (No model.)

To all whom it may concern:

Be it known that we, THOMAS F. DOYLE and WILLIAM E. TICE, citizens of the United States, and residents of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Means for Applying Sand to Tracks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to means for applying sand to tracks, more particularly to means for applying sand adapted to be operated simultaneously with the setting of the brakes to deliver sand before the track-wheels.

Heretofore in applying sand to tracks for railway rolling-stock provision has usually been made to apply the sand to one or both rails when required by hand-operated means, the release of the sand upon the tracks being accomplished by mechanism independently actuated by the engineer, motorman, or other operator in control of the engine or motor. When the sanding mechanism is so arranged, it frequently occurs that the sand is not delivered to the rail at all, owing to carelessness of the operator, or it is not delivered at the most advantageous time to aid in stopping after the setting of brakes—as, for instance, in an emergency stop. It is frequently difficult to apply the sand at the most effective points either in front of or at the rear of the wheel-base, depending on the direction in which the truck is moving. It has frequently occurred that when it is desired to apply sand the sand-pipe adjacent the rail has become stopped with snow and ice if in winter, thereby holding the sand in the pipe instead of delivering the same upon the rail.

The object of this invention is to provide a novel construction of sand-pipes adapted to deliver the sand directly upon the rail and close beneath the wheel and provided with means at the lower end of the sand-pipe adapted to remove snow or ice from the track and preventing the pipes from becoming clogged.

It is also an object of the invention to provide a construction whereby the setting of the brakes act to release the sand upon the rail immediately in advance of the truck and in such close proximity with the front wheels of the truck as to prevent the sand being blown from the track before engaged by the wheels.

It is also an object of this invention to provide a strong, simple, and durable construction adapted to be arranged to deliver the sand either at the front or rear of the truck, as desired, depending upon the direction in which the car or other rolling-stock is moving.

This invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a central longitudinal section of a car-truck provided with a sanding device embodying our invention. Fig. 2 is an end elevation of the same. Fig. 3 is an enlarged vertical section of the sand-box. Fig. 4 is a horizontal section of the same. Fig. 5 is a vertical longitudinal section of the delivery end of the sand-pipe with the hood or plow thereon. Fig. 6 is a horizontal section of the same, taken on line 6 6 from Fig. 5.

As shown in said drawings, A indicates a part of the bottom or floor of the car, and D indicates as a whole the truck of any desired form or construction, but in the present instance shown as an ordinary double railway-truck. Carried on the under side of the car-bottom at the front and rear of said truck and, as shown, centrally are the sand-boxes B, one of which is adapted to furnish sand when the car is moving in one direction and the other of which is adapted to supply the sand to the rail when the car is moving in the opposite direction. Connected at the bottom of each of said sand-boxes B is a pipe B′, which opens into the sand-box beneath a wire screen *b*, which permits the sand to pass freely therethrough, but excludes any material that would otherwise choke or stop said pipe B′. At a point slightly below the sand-box said pipe branches and the ends extend laterally and downwardly to points adjacent to and in advance of the car-wheels and just above each rail. Inclosing each of said pipes B′ and rigidly secured to the under side of the sand-box B is a pipe b^3 of a somewhat greater diameter,

through which extends the stem of a valve b^2, adapted to control the passage through the pipe B′. Said pipe B′ is threaded at its lower end adjacent to track-rails, and a corrugated collar b' is engaged thereon and fits into the open end of the pipe b^3, as shown in Figs. 5 and 6, and acts to hold said pipes concentric with each other. The openings through said collar between the pipes permits circulation of air therein.

On the lower externally-threaded end of pipe b^3 is secured a plow or foot E, which is complementally threaded with said pipe end. Said foot has a bell-shaped interior of much greater diameter near its lower end than the diameter of said pipe and extends in close proximity to the rail. The front and rear sides of said plow are directed forwardly and rearwardly, as shown in Figs. 1, 5, and 6, and afford relatively sharp inclined plow-shaped points adapted to throw snow or the like from the path of the end of the sand-pipe in whatsoever direction the truck moves, thereby and owing to its enlarged bell-shaped lower end preventing snow from packing at the end of the sand-pipe.

Slidably secured in the bottom of each sand-box in position to control the opening into the pipe B′ is a slide-rod C, provided with an aperture which in one position registers with said pipe and in the other passes beyond the same, thereby shutting off the passage therethrough and serving as a valve to control the flow of the sand from the box. Said valves may be operated manually, if preferred. As shown, however, the same are also adapted to be operated simultaneously with the brake. A lever c is pivoted on the end of said slide-rods and is fulcrumed upon a rod or bar C″, secured in the car-frame and extending downwardly a sufficient distance to pass through said lever, as indicated in Figs. 1 and 4. A sleeve c' is provided on the ends of said lever c, adapted to receive the brake-rod F therethrough, which actuates the live brake-lever f at either end of the truck. A set-screw c^2 is provided in each of said sleeves, thereby adapting the slide-rods to be adjustably connected with said brake-rods F, so that the movement of said brake-rod actuates the valve in the bottom of each sand-box in setting or releasing the brake. Usually said levers and valves are so adjusted as to move said slide-rods in the bottom of said box sufficiently to open the outlet into the pipe B′ fully only in the case of an emergency stop and to permit said valves to remain closed or partly closed at all other times. Obviously, if preferred, the adjustment may be such as to permit delivery of a small portion of sand at service stops and permitting the valves to be fully opened at an emergency stop. This can be readily accomplished, as it is obvious that the greater pressure of an emergency stop actuates the live brake-lever F to a greater distance than in service stops.

Obviously the type of valve in the bottom of the box is immaterial, and the valve may be operated pneumatically by connection of the train-pipe or brake-cylinders or by means of said rod F.

The operation is as follows: A car, locomotive, or other rolling-stock may be equipped with the device embodying our invention. Either one or more than one sand-box may be employed, as preferred, and the same may be located at any convenient point in or on said device. When a car is in service, the rear sand connection would ordinarily be shut off by actuating the valve b^2 at the rear of the truck and the opening of the valve b^2 at the front of the trucks, thus preventing waste of the sand at the rear of the truck and delivering all the sand used in advance of the wheels of the truck and immediately beneath the same. The plows at the lower ends of said sand-pipe having large bell-shaped mouths do not readily become clogged with snow or ice. Inasmuch as an air-chamber is provided between the inner sand-pipe B′ and the outer protecting-pipe b^3, the changes of temperature do not so readily affect the sand, thus preventing the same from becoming frozen, as is sometimes the case, and insuring free delivery at all times. The valve in the sand-box, whether operated by direct connection with the brake-rod or by air, is actuated a less degree in a service stop than with an emergency stop, and as a consequence if any sand at all is delivered upon the rails it will be of a much less quantity than with an emergency stop, at which full opening of the sand-pipes is secured, thus insuring a condition of the rail adapted to give a great efficiency for the brake. Inasmuch as the sand is delivered to the track simultaneously with the operation of the brake, it is obvious that there is no danger of such accidents as are frequently caused by the operator forgetting to open his sand-valve.

While we have shown the invention as embodied in connection with a car-truck, obviously the same may be as well embodied in locomotive-engines on which the sand-box is placed as usual—namely, at the top of the boiler—or, if preferred, at any other convenient point.

Obviously any desired connection to afford a discharge of sand near the wheel-base by the setting of the brakes may be used in connection with our invention, and we do not desire to be limited to the exact means and construction shown and indicated, as our invention may be embodied in other ways, and many details of construction may be varied without departing from the principle of this invention.

We claim as our invention—

1. A combination of a railway-truck and brake appliances therefor of a sanding device adapted to be operated by the brake mechanism and a plow rigidly engaged on the lower end thereof.

2. The combination of a railway-truck, the brakes therefor and brake-operating mechanism of a sand-receptacle, a valve therein, actuating means connected with said valve and with the brake mechanism, a pipe opening from said receptacle and a plow on the lower end of said pipe.

3. The combination with a railway-truck and its brake mechanism of a sand-receptacle, a pipe leading therefrom, a casing inclosing said pipe, means on the lower end of said pipe and adapted to direct material away from the end thereof and actuating means connecting said valve with the brake mechanism.

4. In a device of the class described the combination with a truck and the brake mechanism therefor of a sand-receptacle, a sand-pipe provided with an air-chamber therein, a valve controlling said pipe, a pivoted lever engaging therewith and with the brake mechanism and a forwardly and rearwardly directed plow on the lower end of said pipe.

5. A device of the class described, a sanding device adapted to be operated by the brake mechanism, a pipe inclosing the sand-delivery pipe and affording an air-chamber between the same and said pipe and a shoe on the end of said pipe.

6. In a device of the class described the combination with a sanding device operatively engaged with the brake mechanism of a sand-pipe, a pipe inclosing the sand-pipe and providing an air-chamber between the same and said sand-pipe and a rearwardly and forwardly directed shoe thereon.

In testimony whereof we have hereunto subscribed our names in the presence of two subscribing witnesses.

THOMAS F. DOYLE.
WILLIAM E. TICE.

Witnesses:
C. W. HILLS,
W. W. WITHENBURY.