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TRACK SANDING APPARATUS.

(Application filed Apr. 16, 1897.)

(No Model.)

FIG. 1.

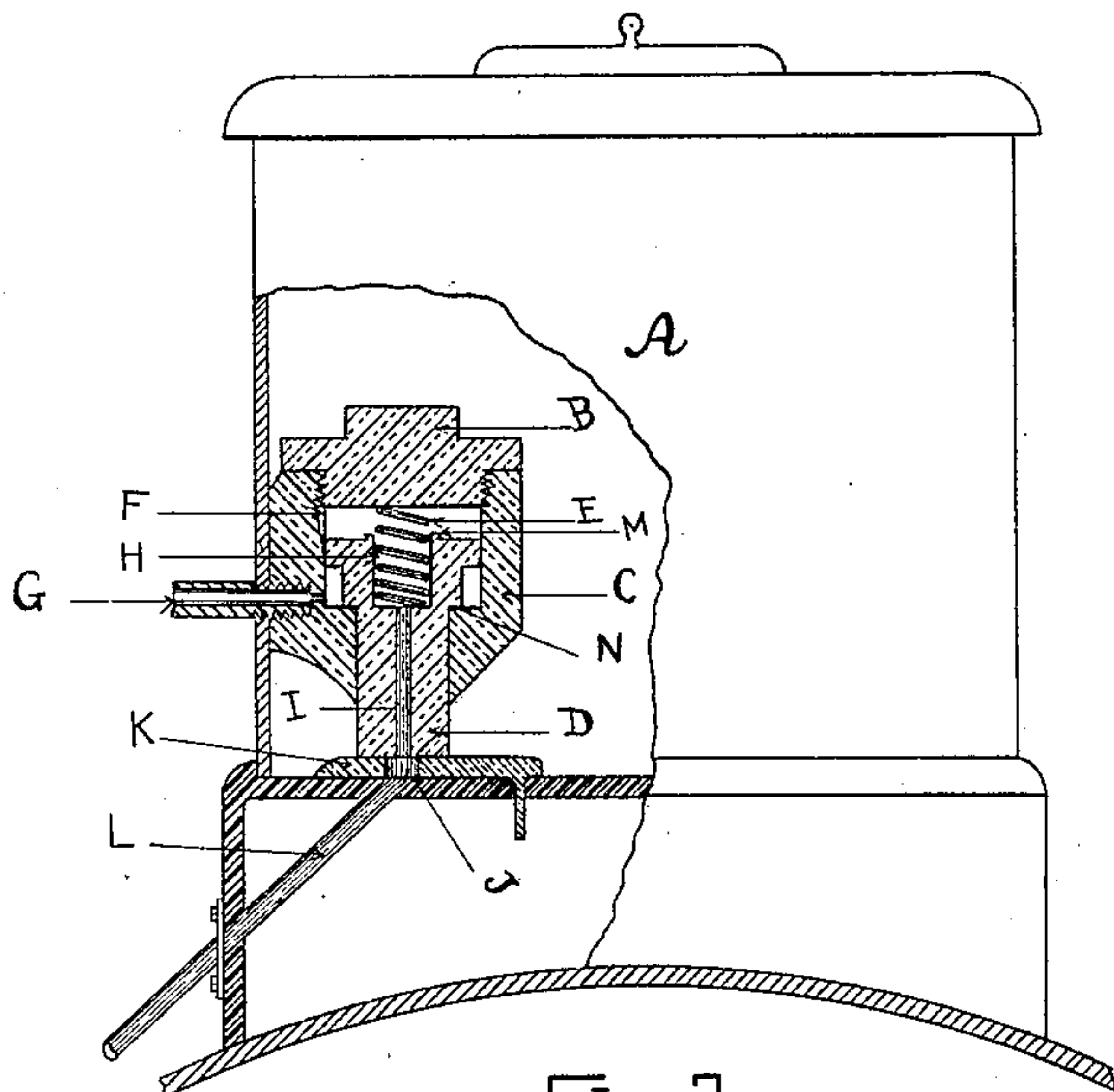
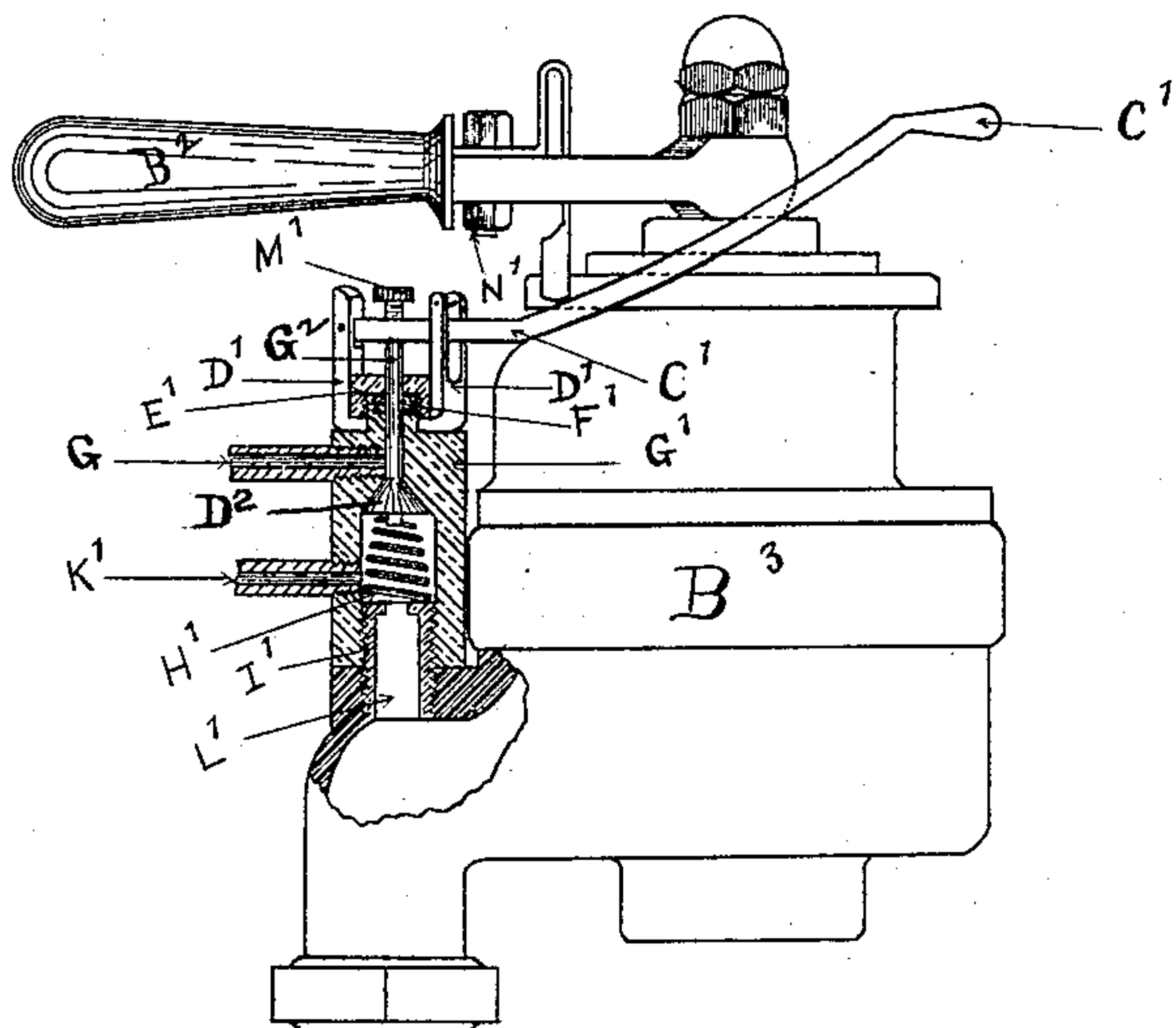


FIG. 2.



Witnesses.

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TRACK-SANDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 614,413, dated November 15, 1898.

Application filed April 16, 1897. Serial No. 632,521. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. WATTERS, WILLIAM R. HOWDON, and WILLIAM A. JACOBS, citizens of the United States of America, and residents of Anniston, in the county of Calhoun and State of Alabama, have invented a certain new and useful Track-Sanding Apparatus; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to track-sanding devices for locomotives, its object being to provide a device of this class which will be satisfactorily operable through the agency of fluid under pressure.

The invention consists, briefly, in a sand-valve adapted to be operated by fluid-pressure and placed inside the sand-box and connected with a source of fluid-supply through a passage controlled by an automatic valve, whereby sand may be delivered to the rails at any point and in any direction where the sand-pipes may be run and in large or small quantity, as the occasion shall require.

It may be here remarked in passing that our invention does not destroy or lessen the efficiency of the ordinary manually-operated track-sanding device, which may hence be continued in use.

The device is shown in the accompanying drawings and in its preferable form as follows:

Figure 1 is a vertical section of a sand-box equipped with our sand-valve. Fig. 2 is a side elevation of the ordinary Westinghouse engineer's air-brake valve and equipped with our automatic air-valve shown in section.

In the figures like reference marks indicate corresponding parts in both views.

A is the sand-box, which has a discharge-pipe L for sand extending from its bottom, over which pipe where it opens into the sand-box is a gate-valve K, which is the ordinary valve of the manually-operative track-sanding apparatus. Through this valve K, so as to register with the opening in the pipe L, is

drilled a hole J, preferably somewhat larger than the inside diameter of said pipe. Over this valve K and substantially concentric with the hole therein is a cylinder or valve-casing C, secured to the inner side of the sand-box A. This cylinder has an aperture in its bottom and is counterbored from above substantially concentric with said aperture, but larger diametrically, whereby a cylinder is provided, and on the shoulder between the two diametrically-differentiated bores is a valve-seat N. The air-pipe G opens into this cylinder just above the said valve-seat N.

D is a combined piston and valve having on its upper end a piston proper fitting within the large bore in the casing C and being extended downwardly through the smaller bore and being adapted when depressed to rest upon the upper side of the valve K and close the opening therein, a shoulder being provided to seat upon the valve-seat end when so depressed, and thereby prevent the passage of air around the valve along the walls of the smaller bore.

E is a spring which acts to press the part D downwardly into closed position.

B is a cap closing the upper end of the casing C, and F is a groove in said casing, near its upper end, forming a by-pass around the piston when same is elevated.

M is a flange projecting upwardly from the piston, and I is a passage down through the part D from within the said flange M to the center of the lower end of the part D or such other portion thereof as registers with the opening through the valve K.

If desired, the part D may be provided with a seat H for the spring E.

From the description of the device so far it will be seen that when air is forced into the larger chamber in the casing C through the pipe G the part D will be raised against the action of the spring E, so as to admit of sand passing between the lower end of this part D and the upper side of the valve K through the aperture in said valve and the pipe L to the tracks. This will occur when a small amount of air is so introduced; but let a greater amount of air be introduced and the part G will be forced upwardly to its limit of movement and air will pass through the by-

pass F, the notches in the stop-flange M, and the passage I to the aperture in the valve K, and thence with the sand through the pipe L. Now it is obvious that the elevation of the part D will increase the amount of sand discharged, which is further increased by the ejector action of the air passing downwardly through the passage I.

We have now described the construction and operation of the sanding device proper and will now proceed to the description of means whereby the device is rendered operative by connecting it with a source of air-supply by means whereby the two degrees of air admission are obtained and whereby the device is placed in operative relation to the engineer's air-brake valve in such a manner as to be also operable by hand, if desired.

By means of an externally-screw-threaded sleeve or bushing L' screwed into an aperture in the engineer's valve in such a position as to open communication through said bushing with a source of air-supply—such as, for instance, the main air-brake reservoir—a casing G' is secured to said engineer's valve. This casing has a chamber formed therein with a valve-seat in its upper end, and a valve D² is set in the said chamber, so as to close over said seat and prevent the passage of air upwardly unless said valve shall be depressed. The pipe G, leading to the casing C, connects with this chamber through the guide-passage for the stem G² of the valve, said stem being channeled, if desired, for that purpose. A spring H', seated between the upper end of the sleeve L' and the lower end of the valve D², serves to keep said valve closed except when depressed, as will be presently set forth.

E' is a stuffing-gland nut, and F' is a packing-ring, which cooperate with the contiguous portion of the casing G' to form a packing for the valve-stem G².

K' is a pipe which may be employed, if desired, to connect to a pressure-gage.

C' is a lever which is secured fulcrumally and is connected with the valve-stem G², its main body being extended upwardly at an angle and passing through the plane of partial revolution of the handle B² of the engineer's valve B³, intersecting said plane at such an angle that the revolution of the lever B² to position of service application will depress the free end of said lever to its first open position, and a further movement of said lever B² into emergency-application position will depress said lever to its limit of downward movement. These two movements of the lever obviously produce correlative movements of the valve D² and admit of the passage of air in two degrees through the pipe G as desired for the specified operation of the sand-valve D. This lever C', as will be seen in Fig. 2, extends to a position in which it may be operated manually, which is frequently necessary, owing to the tendency of the sand to cake and to the fact that it is

sometimes desirable to apply more sand in making a service stop than is ordinarily required. This provides a track-sanding device which is not only automatically cooperative with the air-brake system, but which may also be operated manually either through the air system or in the ordinary way with the hand-rod and valve K.

M' is a screw which is intended to typify any sort of adjustable connection between the lever C' and the stem G² of the valve D².

It is intended that the nut M' shall come into moving contact with the lever C' in the operation of this device; but it is obviously immaterial what part of the lever between the handle and the latch-spring shall come into contact therewith.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a track-sanding device, the sand-box having a discharge-opening a flat gate-valve over said discharge-opening within said sand-box and perforated correlatively to the discharge-opening, a cylinder suspended thereover, a piston movable therein, a piston-rod thereon extending to said valve and adapted to close over the opening in same when the piston is depressed, and means for introducing air under pressure below said piston, for the purpose specified.

2. In a track-sanding device, the sand-box and a cylinder, a discharge-opening and a valve governing same, a piston in said cylinder in operative relation to said sand-valve, a groove in the wall of said cylinder adapted to pass air around the piston when same is at its ultimate point of elevation, a passage leading from the upper end of said cylinder to the said sand-discharge opening, an air-supply pipe leading from a source of air-supply to the lower end of said cylinder and means for admitting the passage of air through said pipe under graduated tensions, for the purpose specified.

3. In a track-sanding device, the sand-box, having a discharge-opening a flat gate-valve over said discharge-opening within said sand-box and perforated correlatively to the discharge-opening, a cylinder suspended thereover, a piston movable therein a piston-rod thereon extending to said valve and adapted to close over the opening in same when the piston is depressed, said rod and piston having an air-passage therein communicating with the interior of said cylinder above said piston and opening through the end of said piston-rod in registry with the perforation in said gate-valve and a by-pass groove in the wall of said cylinder to permit the passage of air around the piston when same is at its upper limit of motion, and means for introducing air under pressure below said piston, for the purpose specified.

4. In a track-sanding device, the combination of the engineer's air-brake valve, the

sand-box and a fluid-actuated sand-valve therein, with a cylinder secured to the said engineer's valve and connected internally with the air-supply pipe thereof, a pipe leading from said cylinder near its top and said sand-valve, a valve moving in said chamber and adapted by its seating to close communication through the said air-pipe G and opening in graduated capacities, and a lever adapted to operate said valve and so set as to intersect the plane of partial revolution of the engineer's air-brake-valve lever so as to be depressed a short distance by the movement of the said engineer's air-brake-valve lever to the point at which it is located on service application and extended at substantially the same angle a proper distance and direction to be further depressed upon the

movement of said lever into emergency-application position, for the purpose specified. 20

5. In a track-sanding device, the combination of the sand-box with a discharge-pipe entering its bottom a sand-valve working in said sand-box covering said discharge-pipe opening, revoluble edgewise and perforated in registry with said discharge-pipe and a fluid-actuated valve adapted to seat over said aperture when same is in registry with said discharge-pipe. 25

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