

(No Model.)

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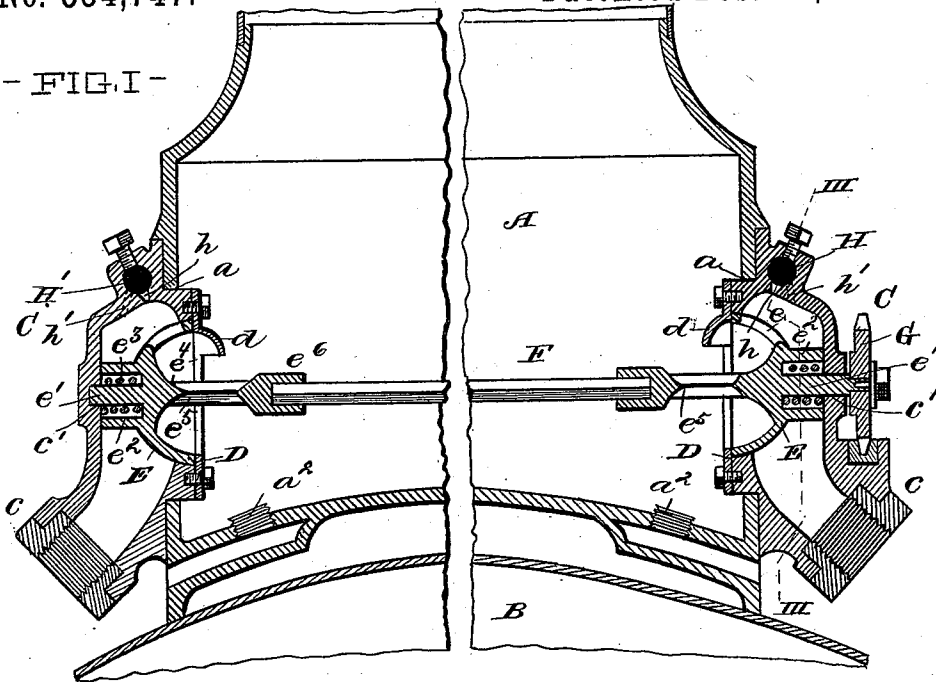
H. TIRMANN.

TRACK SANDING DEVICE FOR LOCOMOTIVES.

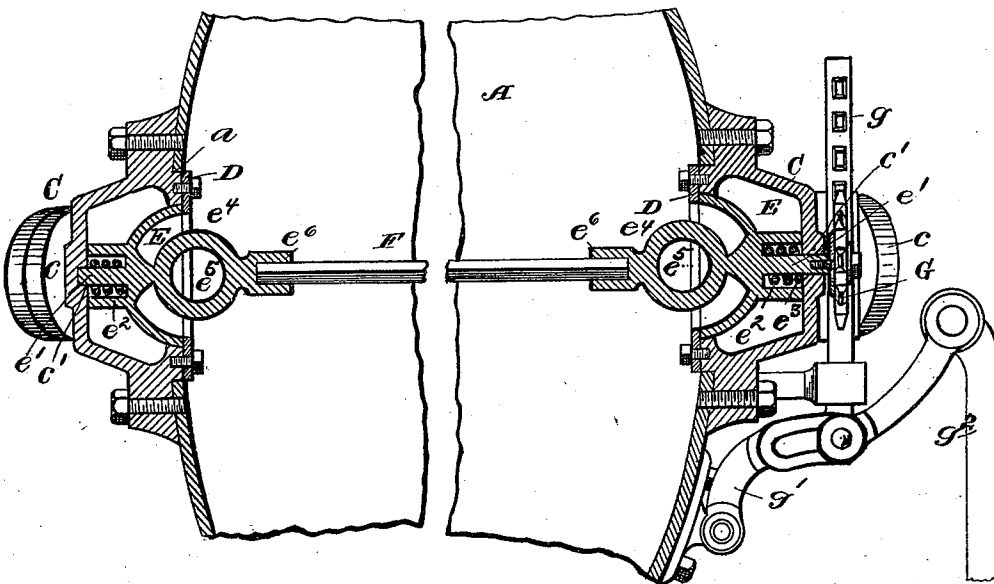
No. 554,747.

Patented Feb. 18, 1896.

- FIG. I -



- FIG. II -



WITNESSES:

J. C. Turner
H. J. Fisher

INVENTOR:

Hugo Tirmann
By Hall & Fay ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

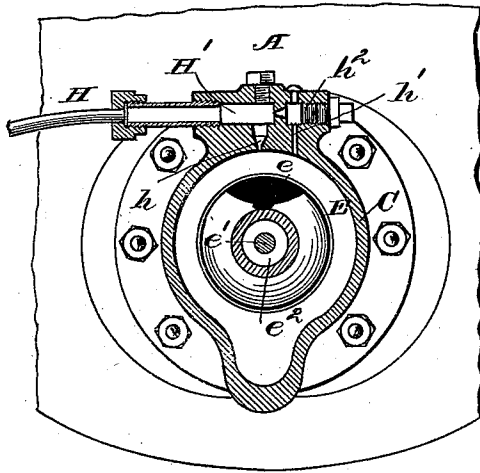
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TRACK SANDING DEVICE FOR LOCOMOTIVES.

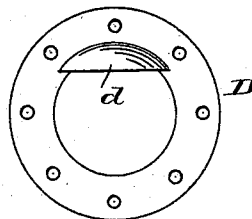
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—FIG. III—



—FIG. IV—



WITNESSES:

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UNITED STATES PATENT OFFICE.

HUGO TIRMANN, OF CLEVELAND, OHIO, ASSIGNOR TO BENJAMIN PATTERSON, OF SAME PLACE.

TRACK-SANDING DEVICE FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 554,747, dated February 18, 1896.

Application filed December 7, 1895. Serial No. 571,353. (No model.)

To all whom it may concern:

Be it known that I, HUGO TIRMANN, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Track-Sanding Devices for Locomotives, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a vertical transverse section of the lower portion of the sand-box of a locomotive provided with my improved track-sanding device; Fig. II, a horizontal section of the sand-box and device; Fig. III, a vertical section of the sanding device, said section being taken on the lines III III in Fig. I; and Fig. IV a face view of the inner side of the valve-seat.

The sand-box A is of the usual construction, secured upon the top of the locomotive-boiler shell B. The usual holes *a* are formed at opposite sides of the sand-box, near the bottom of the same, and casings C are secured over said openings, and are formed with necks *c*, to which the sand-pipes may be attached. Annular valve-rings D are secured to the inner edges of the casings within the sand-box and said valve-seats are formed with inwardly-bulging hoods *d* at their upper portions. Cup-shaped valves E have their edges seated against the valve-seats, bearing against the outer faces of the same, so that the convex sides of the valves may face outward within the casings. The cup-shaped valves are formed with openings *e*, which openings are in the portions of the valves which are normally turned upward. The valves have central pivots *e'*, which are journaled in bearings *c'* in the casings, and said pivots are surrounded by sockets *e''*, within which are fitted spiral springs *e'''*, which bear against the bottoms of the sockets and the sides of the casings, so as to force the valves against the seats.

Shanks *e'* project from the centers of the inner concave faces of the valves, and said shanks are formed with circular openings *e''*, registering with the openings in the valves, and in the line of the air-blast, which will be hereinafter referred to. Sockets *e''* are formed at the inner ends of the shanks, and the ends of a rod F are fitted in said sockets, so that the two valves are connected by said rod and may be revolved together.

A gear-wheel G is secured upon one of the valve-pivots, outside of the casing, and said gear-wheel meshes with a rack-bar *g*, guided to slide horizontally upon that casing. A lever *g'* is fulcrumed upon the sand-box and is pivotally connected to one end of the rack-bar, and said lever may be rocked from the locomotive-cab by means of a rod *g''*, entering the cab at a convenient place exactly in the same manner as the sand-valve-operating rod now usually employed with the ordinary sanding apparatus.

Air-pipes H extend from a suitable source of compressed air into air-jet chambers H' in the upper portions of the casings C. Said chambers are formed with jet-openings *h*, adapted to send air-jets in an inwardly-oblique direction through the openings in the valves and the circular openings in the valve-shanks down into the sand-box and against the bottom of the same. As the sand-blast created by the air-jets would be liable to wear through the bottom of the sand-box, I provide removable plugs *a'* at the points of the bottom of the sand-box which are directly opposed to the jet-openings, and said plugs are preferably made from some soft material, such as wood, vulcanite, or other similar material which will not be cut by a sand-blast, such as the hard metals. The air-jet chambers are formed with outwardly-inclined jet-openings *h'*, controlled by needle-valves *h''*, and said jet-openings serve to admit small jets of air to the outer sides of the valves, so that any sand which may become lodged in the valve-casings or on the valves may be loosened and removed by means of such blast.

When the device is in operative position upon the locomotive, the actuating-rod and the cock which controls the compressed-air supply are arranged within convenient reach

of the engineer. The valves are normally turned so as to bring the openings in the same to face upward. When the engineer desires to apply sand to the track in the ordinary quantity, he admits compressed air through the pipes to the jet-chambers, whence the air will issue through the jet-openings in inwardly-inclined jets. Such jets will stir up the sand in the sand-box and will cause an upward eddy, which will carry the sand with it up through the openings in the valves, whence it will fall down through the valve-casings and the sand-pipes. The outwardly-inclined jet-openings will prevent sand from lodging in the valve-casings and upon the valves; but the jets issuing from said openings are not required to be of sufficient strength to act in any way to force the sand through the sand-pipes.

When an extraordinary amount of sand is required upon the track, the operating-rod is pulled, which will cause the valves to be revolved so as to bring their openings downward, when the sand may freely flow from the box through the valve openings and casings into the sand-pipes and onto the track. The hoods upon the inner sides of the valve-seat rings serve to guide the eddy of sand out through the valve-openings when the air-blast is employed.

This sanding device may be applied to the sand-boxes ordinarily used upon locomotives without any further change than the removal of the valves now in use, the securing of the valve-casings and valves in the openings from which the old valve-casings have been removed, the connection of the sand-pipes to the new valve-casings, and the connection of the valve-operating rod to the lever which actuates the rack-bar. As the air-blast is downward and into the sand in the box, the jet-openings cannot be clogged with sand; neither can the valve-casings or pipes be injured by the sand-blast.

As long as the sand-box is filled to a distance of about six inches from the bottom the sand-blast will not injure the bottom, whether plugs are provided to meet the sand-blast or not; but I consider it judicious to provide the plugs or other means for receiving the force of the sand-blast, so as to provide for the possibility of the sand becoming lowered too far in the box and the blast then cutting through the bottom of the same.

The entire device is simple of construction and is not liable to get out of order, as the bearing-surface of the valve upon its seat is so small that pebbles cannot lodge between the valve and the seat, and sand will not be liable to accumulate in sufficient quantities to interfere with the working of the valve.

All parts of the device are easily accessible and may easily be detached for renewal or repair.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be

made as regards the mechanism thus disclosed, provided the principles of construction set forth respectively in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a track-sanding device, the combination of a casing having an inlet-opening communicating with the sand-box and an outlet communicating with the sand-pipe, a valve-seat at said inlet-opening, a cup-shaped valve seated within the casing upon the valve-seat and formed with an opening in its normally upper portion and having means for rotating it upon the seat, and an air-jet opening in the upper portion of the valve-casing, and inclined to direct its air-jet through the opening in the valve, substantially as set forth.

2. In a track-sanding device, the combination with the sand-box having the ordinary outlet-openings in its sides and near its bottom, of valve-casings secured in said openings and formed with outwardly-facing valve-seats, valves fitted upon said seats, a rod which connects said valves and passes through the sand-box, means for rotating one of said valves, an air-jet mechanism in the upper portions of the valve-casings, substantially as set forth.

3. In a track-sanding device, the combination of a sand-box having diametrically-opposite openings near its bottom, valve-casings secured over said openings and having inwardly-pointing air-jet openings in their upper portions, valve-seats in said casings, valves upon said seats and formed with openings in their normally upper portions and with shanks having openings which lie in a line with the openings in the valve and the inclined jet-openings, a rod passing through the sand-box and having its ends attached to the shanks of the valve, and means for rotating one of the valves, substantially as set forth.

4. In a track-sanding device, the combination of a sand-box having diametrically-opposite openings near its bottom, valve-casings secured over said openings and formed with inlet-openings communicating with the sand-box and outlets communicating with the sand-pipes, valve-seats at the inlet-openings of the casings and having inwardly-overhanging hoods at their upper portions, cup-shaped valves upon said seats having pivots journaled in the valve-casings and formed with openings in their normally upper portions and with inwardly-projecting shanks formed with openings which register with said first-mentioned openings, springs which force said valves upon their seats, a rod having its ends attached to the shanks of the valves, and air-jet chambers in the upper portions of the valve-casings and formed with inwardly-inclined jet-openings, substantially as set forth.

5. In a track-sanding device, the combination of a casing provided with an inlet-open-

ing which communicates with the sand-box
and an outlet which communicates with the
sand-pipe and having an outwardly-facing
valve-seat at the inlet-opening, a cup-shaped
5 valve constructed to rotate upon said seat
and having an opening at its normally upper
portion, and an air-blast chamber at the up-
per portion of the casing and formed with an
inwardly-inclined jet-opening which registers
10 with the opening in the normally-turned valve
and with an outwardly-inclined jet-opening

which may direct an air-blast upon the con-
vex back of the valve, substantially as set
forth.

In testimony that I claim the foregoing to 15
be my invention I have hereunto set my hand
this 20th day of November, A. D. 1895.

HUGO TIRMANN.

Witnesses:

WM. SECHER,
J. C. TURNER.