

(No Model.)

2 Sheets—Sheet 1.

C. F. GAGE.

SANDING APPARATUS FOR LOCOMOTIVES.

No. 566,857.

Patented Sept. 1, 1896.

Fig. I.

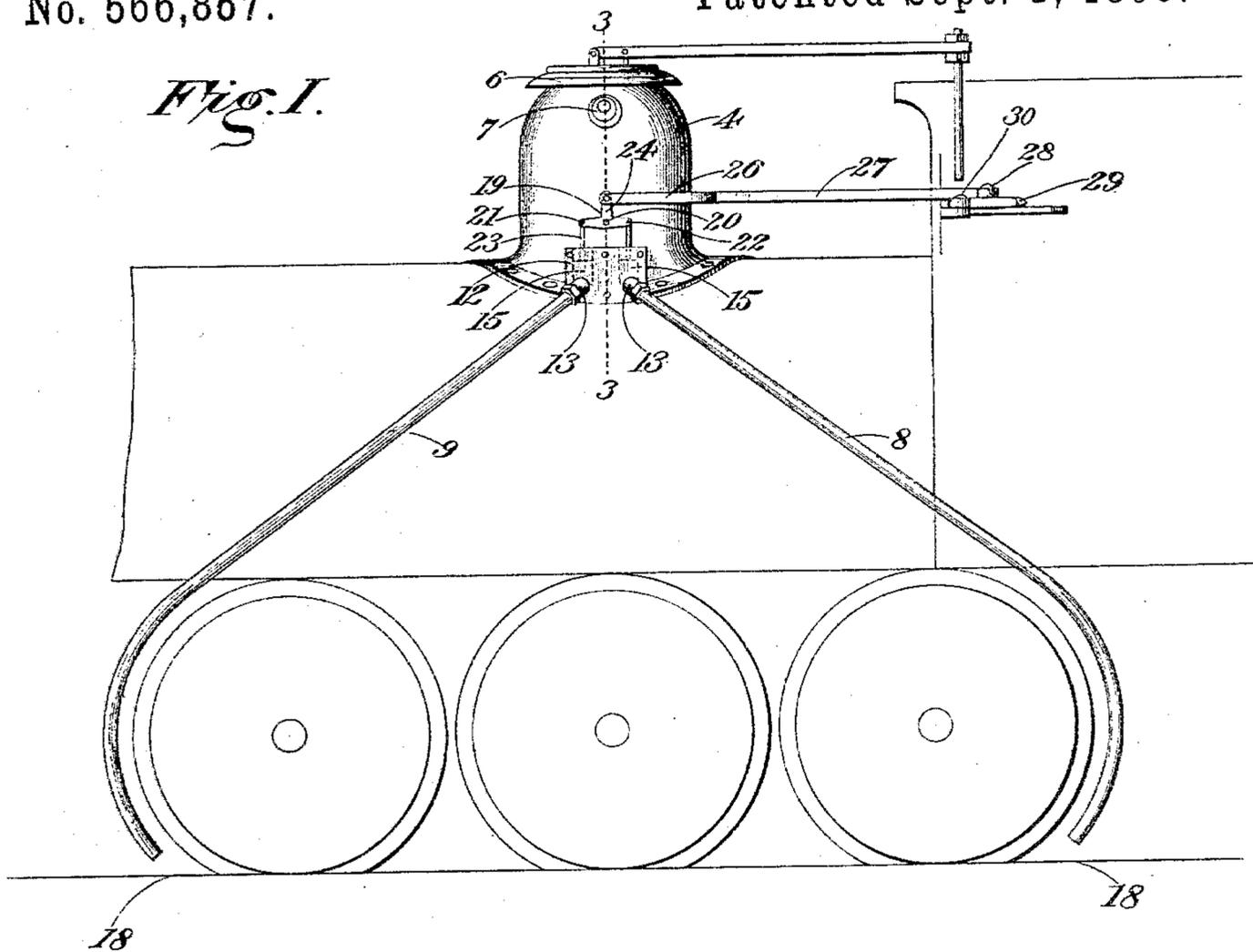
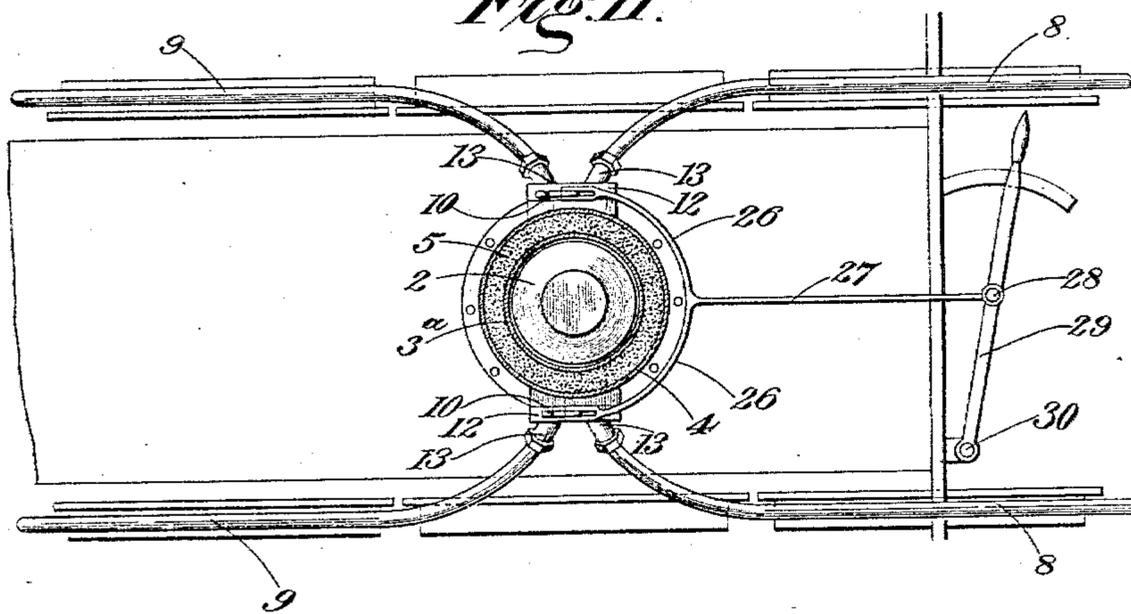


Fig. II.



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Fig. III.

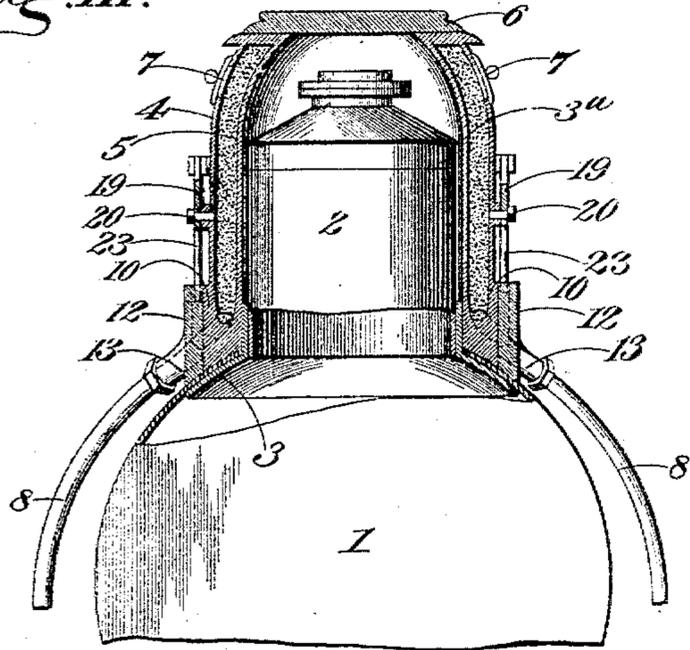


Fig. VI.

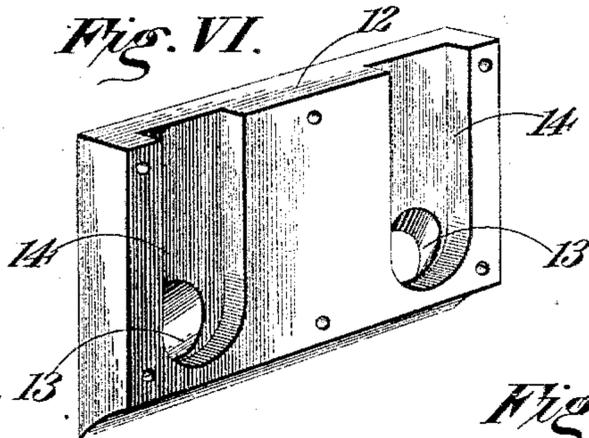


Fig. IV.

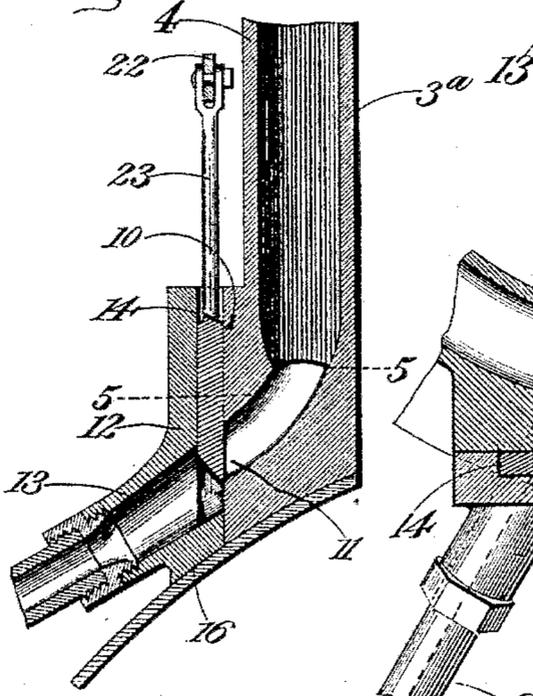


Fig. VII.

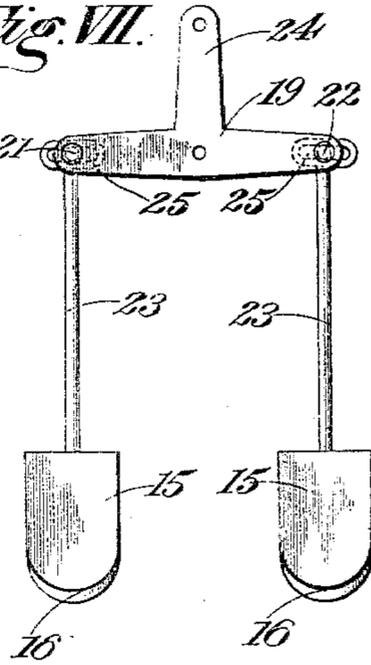
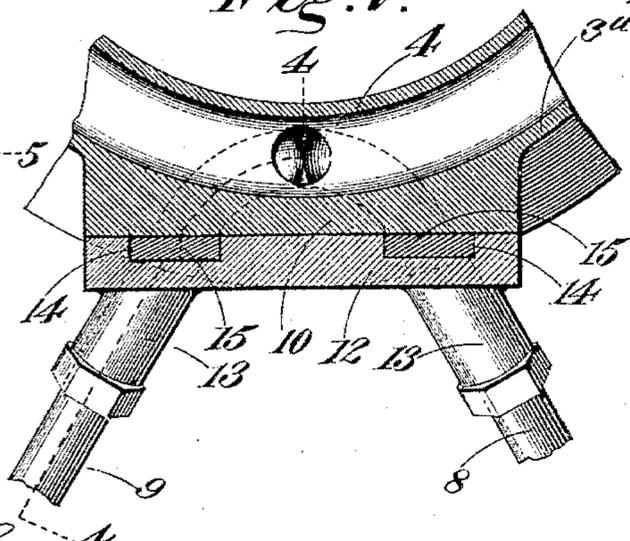


Fig. V.



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UNITED STATES PATENT OFFICE.

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SANDING APPARATUS FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 566,857, dated September 1, 1896.

Application filed October 8, 1895. Serial No. 565,048. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FRANCIS GAGE, of Schuylerville, county of Saratoga, State of New York, have invented certain new and useful Improvements in Sanding Apparatus for Locomotives, of which the following is a specification, reference being had to the accompanying drawings.

One object of my invention is to produce an improved sanding apparatus for locomotives by which the ordinary sand-box upon the top of the boiler near its forward end is dispensed with, and in place thereof a sand-chamber is provided in connection with the steam-dome of the boiler. The use of the ordinary sand-box is not only objectionable because it obstructs the view of the engineer, but also because it increases the cost of manufacture of a locomotive.

Another object of my invention is to provide a non-conductive case around the steam-dome, a provision which serves the double purpose of diminishing the condensation of steam within the dome and of heating the sand in the chamber surrounding the dome. The heating of the sand not only facilitates its free movement whenever it is required, but the sand applied hot to the rails absorbs or dissipates dampness or frost quickly and secures the best results.

A still further object of my invention is to provide means of furnishing, through the movement of a single lever, any of the wheels of the locomotive with sand when the wheels of the locomotive are required to move forward or backward, as the case may be.

In the accompanying drawings, Figure I is a side elevation of a portion of a locomotive equipped with my sanding apparatus. Fig. II is a top plan view thereof. Fig. III is a central vertical section on the line 3 3 of Fig. I. Fig. IV is a detail sectional view as if taken on the line 4 4 of Fig. V. Fig. V is a transverse section on the line 5 5 of Fig. IV. Fig. VI is a perspective view of the valve-casing or face-plate detached. Fig. VII is a side elevation of the sand gates or valves and actuating-lever detached.

Referring to the figures on the drawings, 1 indicates the boiler of any locomotive. Its construction, pattern, or design may be varied in any way as may be required, my ap-

paratus being equally applicable to all kinds of boilers.

2 indicates a steam-dome secured as by a flange 3 to the boiler. The form of dome illustrated is not essential, and I do not limit the application of my invention to any particular style of dome, or to any shape, or dimensions thereof. The form shown is merely illustrated by way of example.

3^a indicates a dome-casing, which may or may not be employed around the exterior of the dome proper, it being entirely practicable to construct my sand-chamber so that the sand shall come into direct contact with the dome proper.

4 indicates an outside shell of suitable shape and dimensions, being designed to give the desired exterior finish to the dome and to provide between it and the dome or, as illustrated, the dome-casing, a sand-space or sand-chamber 5. The space defined between the dome or dome-casing 3^a and the shell 4 constitutes a closed receptacle or sand-box, completely surrounding and protecting the dome, so that when it is filled with sand, as in practice it is designed to be, it forms a non-conductive wall around the dome and diminishes the condensation of steam within the same. At the same time the sand confined therein is kept dry and hot.

The casing 3^a may be provided with a cap 6, which overspreads the shell 4 and affords a suitable finish for the exterior of the combined dome and sand-box.

The shell 4 may be provided with filling-apertures closed by plugs 7, which afford a simple means of access for keeping the box filled with sand. The shell 4 may be made in any suitable manner and is provided with means for delivering sand to the forward sand-pipes 8 and rearward sand-pipes 9, a pair or more of pipes being applied to each side of the locomotive, so that sand may be supplied on both sides to the drivers to enable them to go ahead or to reverse.

The pipes employed to convey the sand from the box may be set at any suitable angle and be made of any suitable material best adapted for the purpose. They may be disposed upon the locomotive in any practicable and desirable way.

In order that some means may be provided

for regulating the flow of sand from the box through the pipes, or any of them, some arrangement of valves or gates must be provided. The arrangement which I have illustrated is simple and well adapted for the purpose, but the details are susceptible of wide variations.

In the arrangement shown the shell 4 is provided upon opposite sides with abutment-walls 10, through which ports 11, of a number to correspond with the number of delivery-pipes employed, pass. A face-plate or casing 12 may be secured to the abutment-wall 10 by suitable means, and it may be provided with fittings or projections 13, whose bores communicate, respectively, with the discharge-ports 11 of the sand-box.

Guideways or seats 14, provided in the face-plate 12, accommodate vertically-sliding valves or gates 15, each valve being preferably brought to a button edge 16, that works against the lower side of the wall of the port 11, or toward the juncture of the abutment-plate with the face-plate. When the valves 15 are closed, the sand is confined within the sand-box, from which it may be released by the opening of one or more of the valves. The delivery-pipes 8 and 9 communicate with the respective projections 13, (see particularly Figs. IV and V,) so that when the sand is released by the opening of one of the valves it finds its exit at the discharge end of the pipe and against the rail 18.

In addition to the mechanism above described I employ suitable valve-actuating mechanism, the preferred embodiment of which consists in mechanism adapted to actuate any set of the valves independently through the operation of a single lever within reach of the engineer or his assistant.

Various mechanisms answering to this description may be contrived, and that which I illustrate is preferred mainly because of its simplicity.

The following is a description of the parts which constitute the preferred embodiment of the valve-actuating mechanism: 19 indicates a double bell-crank lever pivoted, as indicated at 20, to the shell 4. Near its extremity it is loosely pivoted, as indicated at 21 and 22, to the respective stems 23 of the valves 15, which it is designed to operate, one lever 19 being employed for each side of the combined dome and sand-box. By swinging the arm 24 of the lever upon its pivot 20 to one side or the other of the vertical line one of the valves 15 will open and the other remain closed, the independent movement of the lever 19 being permitted by the transverse slots 25, through which the respective stems 23 of the valves 15 are loosely pivoted to the lever. If the arm 24 remains in the vertical position, both of the valves 15 attached to that lever 19 of which the arm 24 is a part will remain closed. The two levers 19 upon opposite sides of the combined dome and sand-box are united, as by the arms 26 of the bifurcated

end of the pitman 27, whose extremity 28 is pivotally secured to an operating-lever 29, pivoted, as indicated at 30, to the wall of the cab.

The operation of my device is as follows: The sand-box 5 being filled with sand the engineer or other operator, as occasion may require, grasping the lever 29 may, by a forward or backward movement thereof, operate the proper valves and produce a discharge of sand through the forward or rearward delivery pipe 8 or 9, as required, to its respective driver. When the lever 29 is returned to its normal position, the arm 24 will be brought to the vertical position and the discharge of sand shut off.

What I claim is—

1. The combination with a locomotive-boiler and steam-dome, of a dome-casing surrounding the dome and an outside shell surrounding the dome-casing and constituting between it and the dome-casing a sand-box, and means for delivering the sand upon the tracks, substantially as specified.

2. The combination with a locomotive-boiler and steam-dome, of a sand-box consisting of a dome-casing, and an outside shell secured to the locomotive-boiler concentric with the dome, forward and rearward delivery pipes upon each side of the sand-box and designed to deliver the sand in front of and behind the drivers on both sides of the locomotive, and valve mechanism controlling the delivery-pipes, substantially as specified.

3. The combination with a locomotive-boiler sand-box and discharge-ports, of valves controlling the discharge-ports, respectively, a double bell-crank lever loosely pivoted at its extremities to the valves, said lever being pivoted to the sand-box, and mechanism for tilting the bell-crank lever upon its pivot, substantially as set forth.

4. The combination with a locomotive-boiler and sand-box, of a pair of forward-delivery pipes and a pair of rearward-delivery pipes upon opposite sides of the sand-box, valves in each of the delivery-pipes, double bell-crank levers upon opposite sides of the sand-box adapted, respectively to actuate a plurality of valves, and a lever operatively connected through intermediate mechanism with both of the double bell-crank levers and designed to actuate them simultaneously, substantially as specified.

5. The combination with a sand-box provided upon opposite sides with abutment-walls, of a face-plate provided with ports correlative with ports through the abutment-walls, valve-guideways within the face-plate, valves in said ways, and valve-actuating mechanism, substantially as specified.

In testimony of all which I have hereunto subscribed my name.

CHARLES FRANCIS GAGE.

Witnesses:

JAMES E. MCECKEN,
GEORGE R. SALISBURY.