

No. 609,299.

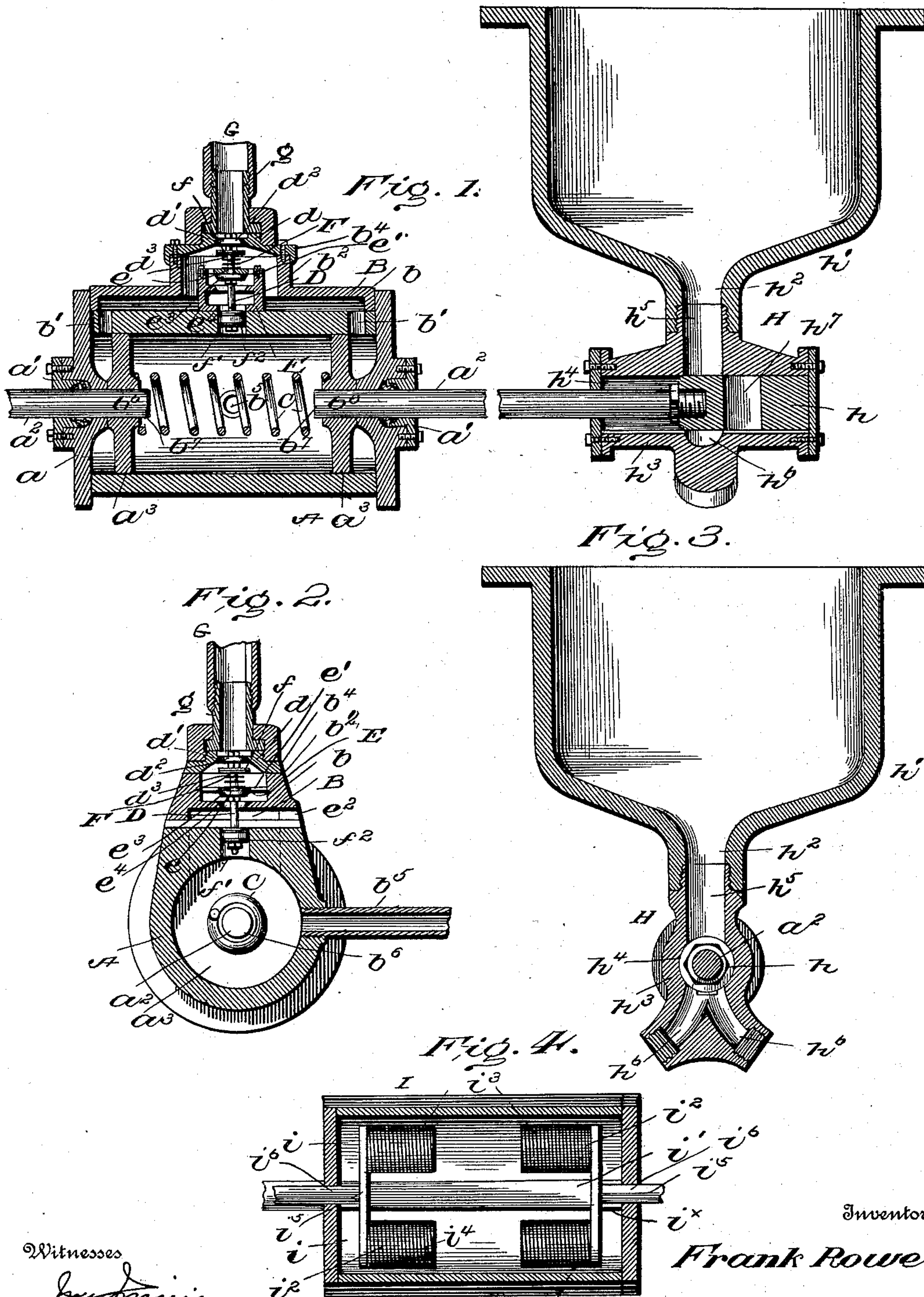
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F. ROWE.

SANDING APPARATUS FOR RAILWAY CARS.

(Application filed July 30, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

FRANK ROWE, OF DOVER, NEW JERSEY.

SANDING APPARATUS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 609,299, dated August 16, 1898.

Application filed July 30, 1897. Serial No. 646,519. (No model.)

To all whom it may concern:

Be it known that I, FRANK ROWE, of Dover, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Sanding Apparatus for Railway-Cars; and I 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.

This invention relates to certain new and useful improvements in sanding devices for railway-cars.

The invention has for its object the production of simple, inexpensive, and highly-efficient mechanism adapted to be automatically operated by the air-brake apparatus of a railway-train, whereby sand will be distributed in front of the wheels of each car-truck of said train, thereby quickly checking the momentum of the latter.

The invention is more particularly designed to be operated upon the emergency application of the air-brake apparatus.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view illustrating my invention. Fig. 2 is a transverse sectional view thereof. Fig. 3 is a transverse view of the sand box or reservoir. Fig. 4 is a longitudinal sectional view of a modification.

Referring to the drawings, A designates a cylinder having end heads a , provided with stuffing-boxes a' , through which are extended the rods a^2 of pistons a^3 , the latter fitting snugly within said cylinder.

B is a chamber formed by a casing b and communicating through ports b' with the interior of chamber A, said chamber B being provided with a cylindrical extension or dome b^2 , which is covered by a cap b^4 , removably secured thereto by any suitable means.

From the interior of chamber A leads a pipe b^5 , which communicates with the train-pipe (not shown) of the air-brake apparatus, whereby pistons a^3 are normally kept separated and in the ends of cylinder A by the usual working air-pressure in the train-pipe, a coil-spring C serving to aid in maintaining said pistons in said separated positions. The in-

ner ends b^6 of the rods a^2 project beyond pistons a^3 a short distance, as at b^7 .

The cap b^4 is provided with an upper cylindrical portion d , having an interior valve-seat d' , against which is designed to fit a valve d^2 , adjustably mounted upon a threaded portion d^3 of a rod D. Said rod is extended downwardly through an opening e in cap-plate e' , which latter is removably secured to a casing E, extending upwardly from cylinder A into the dome b^2 , said casing having an outlet-port e^2 , leading to the outer atmosphere. Escape of air through said port during the operation of the apparatus is prevented by means of a valve e^3 , mounted on rod D and adapted to fit against a seat e^4 , formed in the interior of casing E.

The rod D is normally held elevated with valve d^2 against its seat by means of a coil-spring F, resting at its lower end against cap-plate e' , the tension of said spring being regulated by means of a jam-nut and washer f , working on the threaded portion of rod D. The lower end of the latter is also extended through the bottom of casing E into a port or chamber f' , formed in the casing A, a piston f^2 being adjustably secured thereon, whereby any air-pressure within cylinder A will tend to aid the spring F in keeping rod D elevated.

The pipe G, leading to the auxiliary reservoir, (not shown,) may be connected to the portion d of cap b^4 by any suitable means, the preferred form being a coupling g of the ordinary construction.

To the outer end of each rod a^2 is connected the valve h of the sanding device H. The latter consists of a chamber h' , secured to the car-frame by any suitable means and provided with a reduced outlet h^2 , to which is removably secured a cylindrical casing h^3 , having a central longitudinal bore h^4 , in which said valve is adapted to reciprocate. The casing h^3 is also provided with a vertical bore h^5 , coincident with outlet h^2 and intersecting bore h^4 , the same being provided with outlet branches h^6 , leading to a point adjacent the car-wheels. Communication is established between bore h^5 and the branches h^6 by means of a hole or opening h^7 , formed in valve h , whereby when pistons a^3 are operated sand is allowed to pass from chamber h' to the track-rails.

The operation is as follows: Cylinder A is normally kept filled with air at the usual working pressure of the air-brake apparatus, thus keeping pistons a^2 in the ends of said cylinder, and at the same time acting upon piston f^2 , serving, with the aid of spring F, to keep valve d^2 against its seat d' . When the pressure in the train-pipe is suddenly reduced, as in the emergency application of the brakes, the air rushes out of cylinder A through pipe b^5 . As soon as the pressure within cylinder A, added to that of spring F, becomes less than the pressure in pipe G valve d^2 is automatically unseated and valve e^3 simultaneously seated, permitting the air from pipe G to pass into chamber B and through ports b' into chamber A, whereupon the pistons a^3 are moved against the action of spring C, resulting in the operation of the valves of the sand-boxes and permitting sand to reach the track-rails adjacent the wheels of each truck. The valve e^3 during this operation prevents escape of air to the outlet e^2 . It will be noted that the ends b^7 of the rods a^2 prevent the pistons a^3 from moving over or closing the outlet to the train-pipe. As soon as the train-pipe is again charged to the working pressure the pressure in cylinder A, together with that of spring F, becomes greater than that in pipe G, whereupon the valves d^2 and e^3 are respectively automatically seated and unseated, allowing what air that may remain in chamber B to pass out through the outlet e^2 and causing the pistons a^3 to automatically move back to their normal positions.

In Fig. 4 I have illustrated a modification of the apparatus for operating the sanding device. The same comprises a casing I, formed with two cylindrical chambers i , communicating with each other by means of a longitudinal slot i' , formed in the division-wall i^x . In said casing are located two horseshoe-magnets i^2 , which must be shunt wound, the poles i^3 i^4 of each magnet being located opposite each other, the poles i^3 resting in one chamber i , while the poles i^4 rest in the other one of said chambers. The yokes i^5 of each magnet are projected through slot i' , and the operating rods or levers i^6 for the sand-boxes are connected direct thereto. In practice electricity is conducted to said magnets in any preferred manner, the poles of the latter being so wound as to normally repel each other. Said current is also passed through a suitable "inverting-switch" (not shown) prior to reaching said magnets, whereby when said switch is operated the currents around the magnets are changed, so that the poles of the latter are made to attract each other, thus effecting the operation of the sand-boxes. If desired, a set-spring may be employed to prevent the attraction of the poles of the magnets from operating the sand-box until the current is sufficient in strength to overcome the tension of said spring.

The advantages of my invention are at once

apparent to those skilled in the art to which it appertains. In the forms of sanding devices now in general use it is customary to deposit sand adjacent the wheels of the locomotive alone, with the result that the sand is soon ground into a powder and affords no resistance for the wheels of the succeeding cars. This difficulty I overcome by depositing the sand adjacent the car-wheels of each truck, and by this means a train can be quickly and readily brought to a standstill. My invention also possesses many advantages in point of simplicity, durability, and efficiency.

I claim as my invention—

1. The herein-described sanding device, comprising a sand-reservoir having an outlet, a cylindrical casing connected thereto and provided with a longitudinal chamber and having a vertical bore coincident with said outlet, a valve working in said longitudinal chamber and adapted to close said bore, lateral branch pipes leading from said bore, and means adapted to automatically operate said valve, substantially as set forth.

2. The herein-described sanding apparatus, comprising a sand-reservoir having an outlet, a transverse member removably secured to said reservoir and provided with a longitudinal chamber and a vertical bore coincident with said outlet, said bore intersecting said chamber, a reciprocating valve working in said chamber, lateral branch pipes leading from said vertical bore, and means adapted to automatically operate said valve, substantially as set forth.

3. The herein-described sanding apparatus, comprising a sand-reservoir having an outlet, a transverse cylindrical casing connected thereto and having an interior chamber communicating with said outlet, a reciprocating valve working in said chamber, a casing mounted adjacent said sand-reservoir, means for supplying air thereto, and a piston connected to said valve and adapted to be operated by the air-pressure within said cylinder, substantially as set forth.

4. The combination with controlling means, of a casing, members connected to said controlling means and located within said casing, means designed to cause said members to move away from each other, independent means designed to cause said members to move toward each other, and a valve constructed and arranged to be operated by air-pressure in said casing to control said latter means, as and for the purpose set forth.

5. The combination with controlling means, of a cylinder, pistons working therein and connected to said controlling means, means for supplying air to said cylinder, whereby said pistons are normally held apart, a spring interposed between said pistons, a chamber communicating with said cylinder, means for supplying air thereto, and a valve designed to automatically control the admission of air

to said chamber, said valve having a lower, piston-like stem designed to be acted upon by the air-pressure within said cylinder, substantially as set forth.

5 6. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means, means for supplying air to said cylinder, whereby said pistons are normally held apart,
10 a chamber having ports communicating with said cylinder and provided with an upper opening, means for supplying air to said chamber through said opening, and a valve adapted to automatically close said opening,
15 and having a stem provided with a lower, piston-like end extending into an opening leading from said cylinder, substantially as set forth.

7. The combination with controlling means,
20 of a cylinder, pistons working therein, and adapted to operate said controlling means, means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder
25 and having an upper dome or extension, a cap-plate secured to the latter and having an opening therein, means for supplying air to said chamber through said opening, and a valve adapted to normally close the latter,
30 substantially as set forth.

8. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means, means for supplying air to said cylinder,
35 whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper dome or extension provided with an opening therein, a valve adapted to normally close the same, and means for
40 regulating the escape of air from said chamber, substantially as set forth.

9. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means,
45 means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper dome or extension provided with an opening therein, a valve adapted
50 to close said opening, means for supplying air to said chamber through said opening, a casing located in said dome or extension and having an escape-opening, and a valve adapted to automatically close said escape-
55 opening when said former valve is unseated, substantially as set forth.

10. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means,
60 means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper opening, a valve adapted to normally close the same, a casing located
65 in said chamber having an upper open end and an interior outlet-port, and a valve adapted

to automatically close said latter port when said former valve is unseated, substantially as set forth.

11. The combination with controlling means, 70 of a cylinder, pistons working therein, and adapted to operate said controlling means, means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder 75 and having an upper opening, a casing located in said chamber and having an outlet-port, a rod guided by said casing having valves adapted to cover both said upper opening and said outlet-port, and means for holding said 80 rod normally elevated, substantially as set forth.

12. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means, 85 means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper opening, a casing located in said chamber and having an outlet-port, 90 a rod guided by said casing and having a valve adjustably secured to its upper end adapted to close said upper opening, a second valve rigidly secured to said rod and adapted to close said outlet-port, and means for holding 95 said rod normally elevated, substantially as set forth.

13. The combination with controlling means, of a cylinder, pistons working therein, and adapted to operate said controlling means, 100 means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper opening, a casing located in said chamber and having an outlet-port, 105 a rod guided by said casing and having a valve adjustably secured to its upper end and adapted to close said opening, a second valve rigidly secured to said rod and adapted to close said outlet-port, a spring adapted to keep said 110 rod normally elevated, and means for adjusting the tension of said spring, substantially as set forth.

14. The combination with controlling means, of a cylinder, pistons working therein, and 115 adapted to operate said controlling means, means for supplying air to said cylinder, whereby said pistons are normally held apart, a chamber communicating with said cylinder and having an upper opening, a casing located 120 in said chamber and having an outlet-port, a rod guided by said casing and extending through a port or chamber in the walls of said cylinder, a piston secured to the lower end of said rod and working in said port or cham- 125 ber, a valve adjustably secured to the upper end of said rod and adapted to close said upper opening, a second valve on said rod adapted to close said outlet-port, and a spring serving to hold said rod normally elevated, sub- 130 stantially as set forth.

15. The combination with a series of sand-

boxes each having an outlet, and a valve adapted to control the same, of a casing, members adapted to reciprocate therein, means for operating the same, and rods connecting said
5 members and the valves of said sand-boxes, as and for the purpose set forth.

In testimony whereof I have signed this

specification in the presence of two subscribing witnesses.

FRANK ROWE.

Witnesses:

RICHARD FITZHERBERT,
THOMAS BAKER.