(No Model.) 2 Sheets—Sheet 1.

H. McPHERSON.

SAND BOX FOR CARS.

No. 512,480. Patented Jan. 9, 1894.

Fig 1

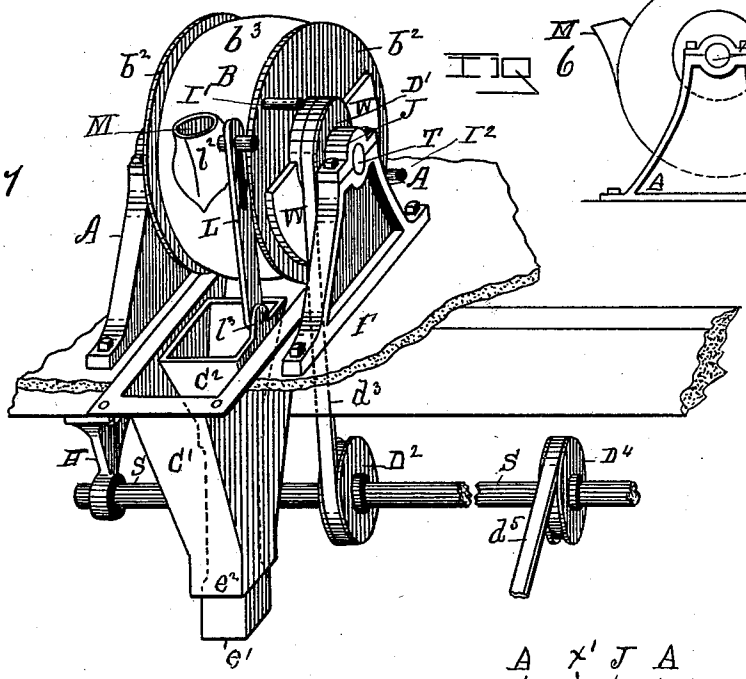


Fig 6

Fig 2

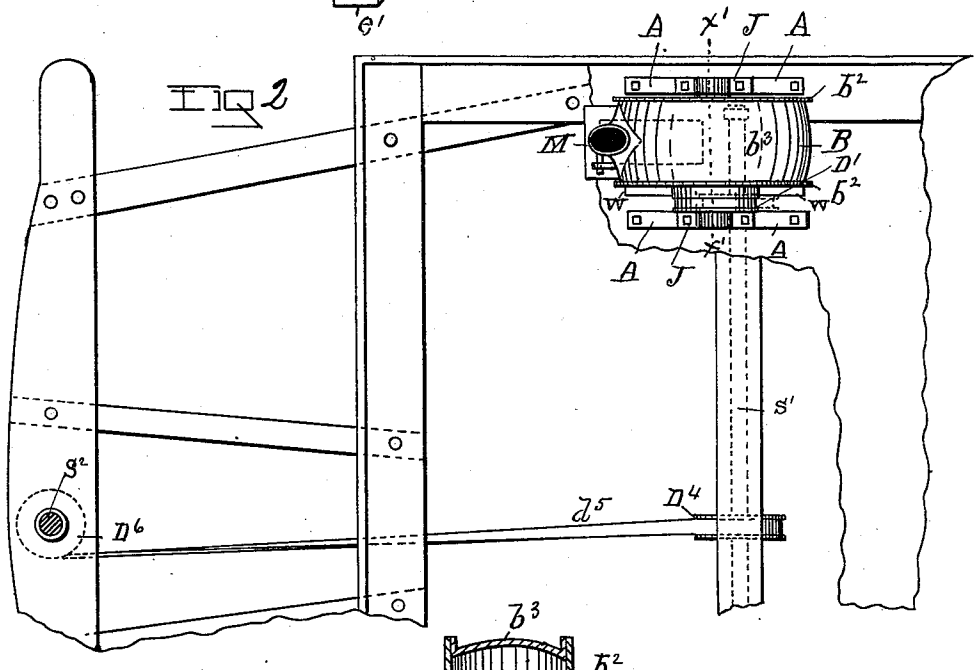
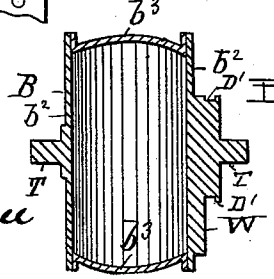


Fig 3



WITNESSES
William A. Sweet
Charles S. Brinkhaus

INVENTOR
Henry McPherson
by W. E. Hagan Atty

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

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SAND BOX FOR CARS.

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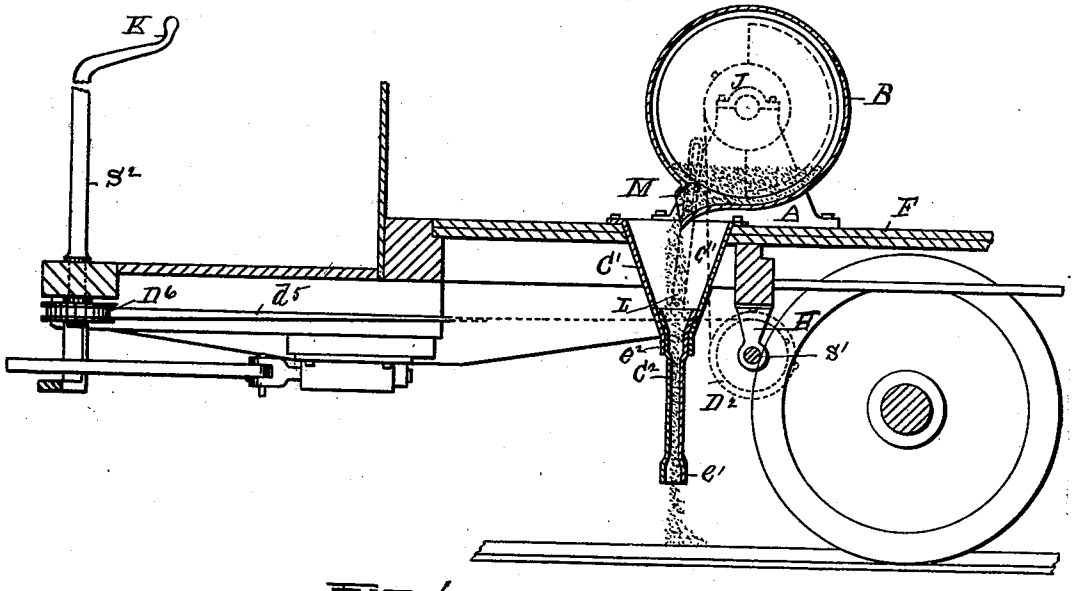

FIG 4

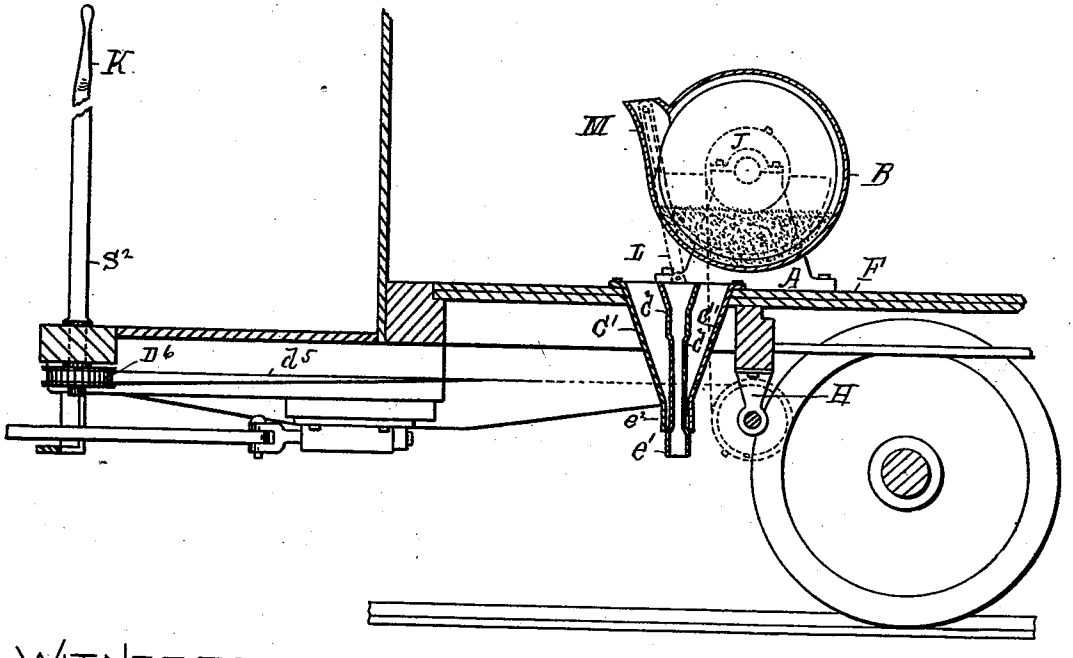

FIG 5

WITNESSES

William A. Sweet

Charles S. Brimhall

INVENTOR

Henry McPherson

by W. Hagan atty

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY McPHERSON, OF TROY, NEW YORK, ASSIGNOR OF ONE-FOURTH TO CORNELIUS V. COLLINS, OF SAME PLACE.

SAND-BOX FOR CARS.

SPECIFICATION forming part of Letters Patent No. 512,480, dated January 9, 1894.

Application filed March 27, 1893. Serial No. 467,774. (No model.)

To all whom it may concern:

Be it known that I, HENRY McPHERSON, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Sand-Boxes for Cars, of which the following is a specification.

My invention relates to improvements upon that class of apparatus which is used upon street cars operated to run upon rail tracks; the purpose and use of which apparatus are to distribute sand upon the tracks when greasy or icy, so that the wheels will turn upon the rails instead of sliding thereon. As heretofore made devices of this kind have been constructed with a hopper having a sand delivery chute connected with the bottom of the hopper, and the interior of the latter provided with an agitator designed to stir up the sand, and facilitate its descent into the chute from whence it passes to the rails. The chutes of these older devices connected directly with the hopper bottom, and as thus placed when the cars were in motion, would suck up moisture that would cause the sand to pack in summer, and to freeze in winter, so that they were difficult to operate and uncertain in their action. To avoid these contingencies, and to obtain better results, from an apparatus designed for these uses, is the object of my invention. This better adaptation of the purposes designed I accomplish by means of a cylindrical-form sand receptacle, which at its sides is hung in trunnion journals; is made with a delivery spout-form mouth that is tangent to its outer cylindrical-form face, with this receptacle operated to in part rotate on its bearings so as to bring its delivery mouth down over a chute leading to the track for the delivery of sand thereto, and which receptacle when the power applied to thus tilt it on its bearings is released, will automatically by the action of gravity return to a position with its delivery mouth uppermost, all of which will be more fully set forth hereinafter and detailed in the claims.

Accompanying this specification to form a part of it there are two plates or drawings containing six figures illustrating my invention, with the same designation of parts by letter reference used in all of them.

Of these illustrations Figure 1 is a perspective of my improved sand box; showing also a part of the car floor on which the former rests; a part of one of the car truck cross beams, with a part of the shaft, its drum pulleys and draw-belts, by which it receives motion and operates the sand box. Fig. 2 is a top view of the sand box showing part of the platform beam, part of the car-truck end beam, also part of one of the car truck side beams and car floor. This view shows also in a dotted line the shaft operating the sand box, and the draw-belt and drum pulley on the shaft, by which the latter is operated. Fig. 3 is a central vertical section of the sand box taken on the line x, x, of Fig. 2. Fig. 4 is a section taken centrally through the sand box, the sand chutes, the car platform and floor, and the shaft hanger; with the vertical shaft and operating crank, its drum pulley and draw-belt shown in side elevation, and with the sand box illustrated as in a position to deliver sand to the track. Fig. 5 shows the same parts that are illustrated at Fig. 4, but with the sand box turned so that its delivery spout is uppermost, and in a position to not deliver sand, and with the supplemental chute shown as raised. Fig. 6 shows a modified form of sand box.

The several parts of the apparatus thus illustrated are designated by letter reference and the function of the parts is described as follows:

The letter B designates the sand box proper, it having a cylindrical or drum-form to contain the sand, and made with the sides b^2, b^2, and a cylindrical-form perimeter b^3, made to preferably have an outwardly rounded surface m.

The letters T designate trunnion-form journals of which there is one projected from each side of the sand box.

The letters A designate standards of which there is one at each side of the sand box. These standards preferably are bolted to the car floor F, beneath one of the car seats and they are each made with a journal box J, for one of the trunnion-form journals T.

The letter M designates a mouth or spout for the discharge of sand from the box when the

latter is turned half a revolution, so as to bring the mouth or spout projecting downward. This mouth or spout is tangentially projected from the concave perimeter of the sand box.

The letter W designates a weight or counterpoise preferably made in a segment form and arranged on that half of one of the sides of the sand box which is diametrically opposite to that whereat the spout or mouth is located, and the function of this weight or counterpoise is to automatically cause the sand box to rotate part of a turn so as to bring the spout or mouth uppermost after having been operated to turn down to deliver sand.

The letter D′ designates a drum pulley arranged on, so as to turn with the trunnion journal T, on which it is attached, and the letter S a shaft having its journals in hangers H, downwardly projected from the under side of the car truck. The letter D^2 designates another drum pulley arranged on, to turn with said shaft S′, said pulley D^2, having tangentially connected thereto a draw-belt d^3, which at its other end connects tangentially with the drum pulley D′, on the trunnion journal J; and the letter D^4 designates another drum pulley arranged on, so as to turn with the said shaft S′; and the letter d^5 designates another draw-belt that tangentially connects with the drum pulley D^4, at one of its ends, and at the other end, tangentially connects with the drum pulley D^6, on the lower end of the vertically placed operating shaft S^2, which at its upper end is constructed with a crank K. As thus made and arranged when the operating crank K is moved to cause the shaft S^2 to make half a turn, it operates the drum pulley D^6 thereon, and this actuates its connected draw-belt d^5, to operate the shaft S′ to make half a turn, and this causes the pulley D^2, by means of the draw-belt d^3, to operate the drum pulley D′ to move the sand box so as to have it partly revolve on its journals, and to turn down until the mouth or spout M, is in a position to discharge sand therefrom, and when the tension upon the crank K is released, the counterpoise weight W causes the parts to make half a turn with reverse motion so as to bring the mouth or spout uppermost.

The letter I′ designates a stop made on the side of the sand box, which as the latter turns downwardly to discharge sand, when it reaches the desired limit, this stop I′ engages with the side edge of the adjacent standard A, to prevent its further descent. The letter I^2 designates another stop made on the side of the sand box, and this stop in like manner engages with the side edge of the adjacent standard A, to prevent its momentum, as acted upon by the counterpoise, from carrying it too far in return movement. While these stops perform the function of limiting the progressive and reverse rotation of the sand box they perform another useful and quite as important function, which is accomplished by jarring or shaking up the sand when the box is suddenly brought up against the stops; thus freeing it from any packing tendency that might occur from the settling consequent upon the jarring of the cars while moving.

The letter C′ designates a chute located in the car bottom, said chute having an upper expanded and flaring top, and a contracted lower end e^2.

The letter C^2 designates a supplemental chute that is made to be operated telescopically within the other chute, so as to rise and fall through a connection made with the sand box. This connection consists of a link L, which at its upper end l^2, is pivoted to the side of the spout M, and at its lower end l^3, is pivoted to the top of the supplemental chute C^2, at its side. As thus made, when the sand box makes a half revolution, it carries down the supplemental chute within the chute C′, until the discharge end e', of the former is close to the track, and when the sand box makes a half revolution in reverse movement the supplemental chute is drawn upwardly within the chute C′, where it is out of the way.

In the modification shown at Fig. 6, the sand box has its trunnion-form journals eccentrically placed so that after being moved half a revolution to bring the mouth or spout down to where it will discharge sand, instead of being operated by the attached counterpoise W, the eccentric position of the journals relatively to the box, when acted upon by gravity, causes it to automatically make a reverse motion of a half turn.

The generic feature of my invention being to have the sand box operated so that after having made a half revolution under tension, and caused to come into a position where it will discharge sand, and to automatically make a half turn with reverse motion when the tension is released, I do not limit my invention to the precise means which I illustrate, as so employed to operate the sand box, but I do limit my invention to the use of a means that will operate it in substantially the same manner.

I am aware that it is not new to arrange a sand-box beneath the car bottom, said sand-box being provided with trunnions on which to turn and be operated by a bell-crank lever and a tripping pin, and having a spout of sufficient length to deliver sand and water directly to the track. When thus arranged the sand-box is in a position to be injured by collisions and articles upon the track, with its contents exposed to the direct action of frost and cold and at times when the sand is most needed upon icy tracks.

By locating my sand-box within the car beneath the car seats, and combining with the sand-box so located a passage-way through the car bottom the sand is kept dry and free from the effect of cold, and the contingencies attending upon its being located beneath the car.

While I have shown two chutes, one work-

ing within the other, yet either may be used independently of the other in combination with my improved sand box.

As thus made and arranged to be operated, a sand box is produced in which no packing of the sand can occur, and which when not delivering sand has its mouth or discharge chute within the car, which as thus arranged prevents the dampening and packing of the sand in warm weather and its freezing in winter.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for distributing sand to rail-tracks the combination with a sand-box arranged within the car interior, said sand-box having a drum-form that is provided with trunnion-form journals on which to turn, and stops to regulate its forward and reverse rotation, and having a delivery spout substantially as described; of a passage-way made in the car-bottom through which the sand coming from the sand-box may pass to the track when the sand-box is turned to bring the spout over said passage in the car-bottom substantially in the manner as and for the purposes set forth.

2. The combination with a sand box having a drum-form, and trunnion-form side journals made with bearings, and provided with a mouth or spout in its circumferential face, and constructed to make a half turn in its bearings and bring the spout or mouth at the bottom, and to automatically reverse by a half revolution to bring its mouth or spout at the top; of a stationary chute passing down through the floor with its upper open end immediately below the mouth or spout of the sand box when turned down, substantially in the manner as and for the purposes set forth.

3. The combination with a drum-form sand box provided with side journals and bearings, and having a mouth or spout in its circumferential face, said sand box being constructed to make a half turn and to automatically reverse, substantially as described; of a sand chute pivotally connected with the mouth or spout of said sand box constructed and arranged to operate substantially in the manner as and for the purposes set forth.

4. The combination with a drum-form sand box provided with side journals and bearings, and having a mouth or spout in its circumferential face, and constructed to make a half turn and to automatically reverse, substantially as described; of a stationary chute arranged with its upper open end in the car floor and its lower end projected downwardly toward the track, and a supplemental chute arranged within the stationary chute and pivotally connected by a link with the mouth of the sand box, and operated by the latter to telescopically move reciprocatingly within the stationary chute, substantially in the manner as and for the purposes set forth.

5. The combination with a drum-form sand box that is provided with side journals and bearings arranged in upwardly projecting standards and having a mouth or spout that is projected from its circumferential face, said sand box being constructed to make a half turn and to automatically reverse, substantially as described; of a stop arranged on one of the drum sides of the sand box, constructed and placed to engage with the side edge of the adjacent standard, and to arrest the progressive motion of said sand box, substantially in the manner as and for the purposes set forth.

6. The combination with a drum-form sand box that is provided with journals and bearings arranged in upwardly projected standards and having a mouth or spout that is projected from its circumferential face; said sand box being constructed to make a half turn and to automatically reverse, substantially as described; of a stop arranged on one of the drum sides of the sand box, constructed and placed to engage with the side edge of the adjacent standard, and to arrest the reverse motion of said sand box, substantially in the manner as and for the purposes set forth.

7. The combination with the sand box B, made with journals T, bearings J, and having the mouth or spout M; of the drum pulley D′ arranged on one of said sand box journals; the shaft S′ having bearings or hangers dependent from the car bottom, and provided with the drum pulleys D^2 and D^4; the vertical shaft S, having the crank K at its upper end, and the drum pulley D^6, at its lower end; the draw-belt d^3, tangentially connecting with the drum pulley D′ and D^2; and the draw-belt d^5, tangentially connecting with the drum pulleys D^6 and D^4, substantially in the manner as and for the purposes set forth.

Signed at Troy, New York, this 14th day of January, 1893, and in the presence of the two witnesses whose names are hereto written.

HENRY McPHERSON.

Witnesses:
W. E. HOGAN,
CHARLES S. BRINTNALL.