(No Model.) 4 Sheets—Sheet 1.

H. F. PARKER.

SAND BOX FOR CARS.

No. 454,182. Patented June 16, 1891.

Fig. 1.

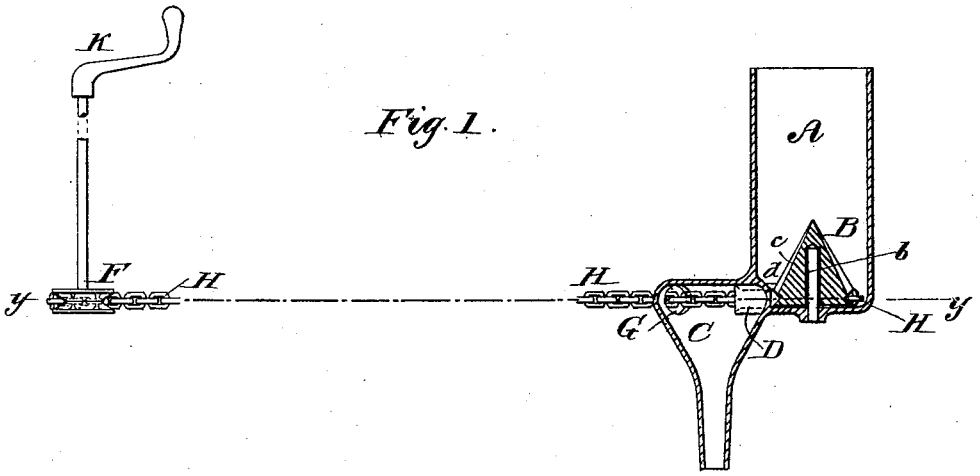


Fig. 2.

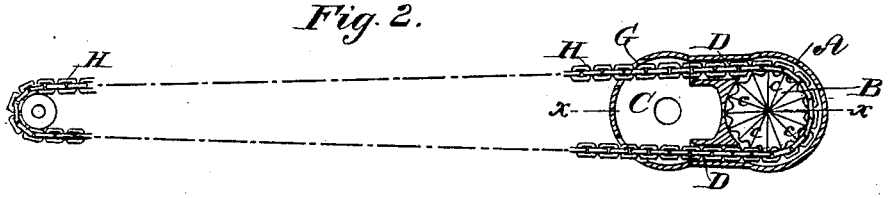


Fig. 4.

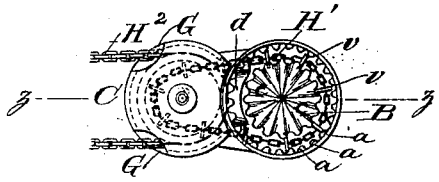


Fig. 3.

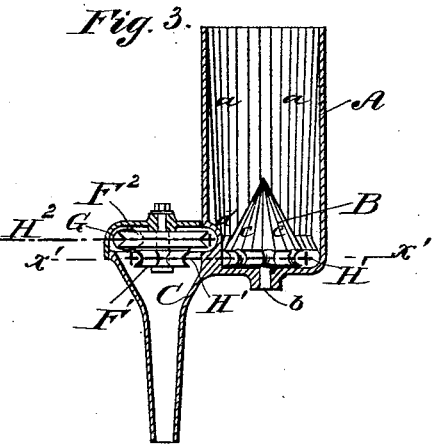


Fig. 5.

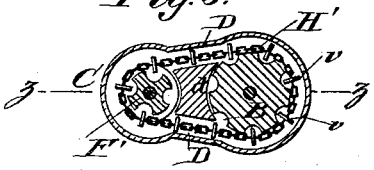
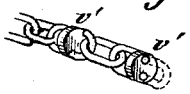


Fig. 5a



WITNESSES:

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(No Model.) 4 Sheets—Sheet 2.

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SAND BOX FOR CARS.

No. 454,182. Patented June 16, 1891.

Fig. 6.

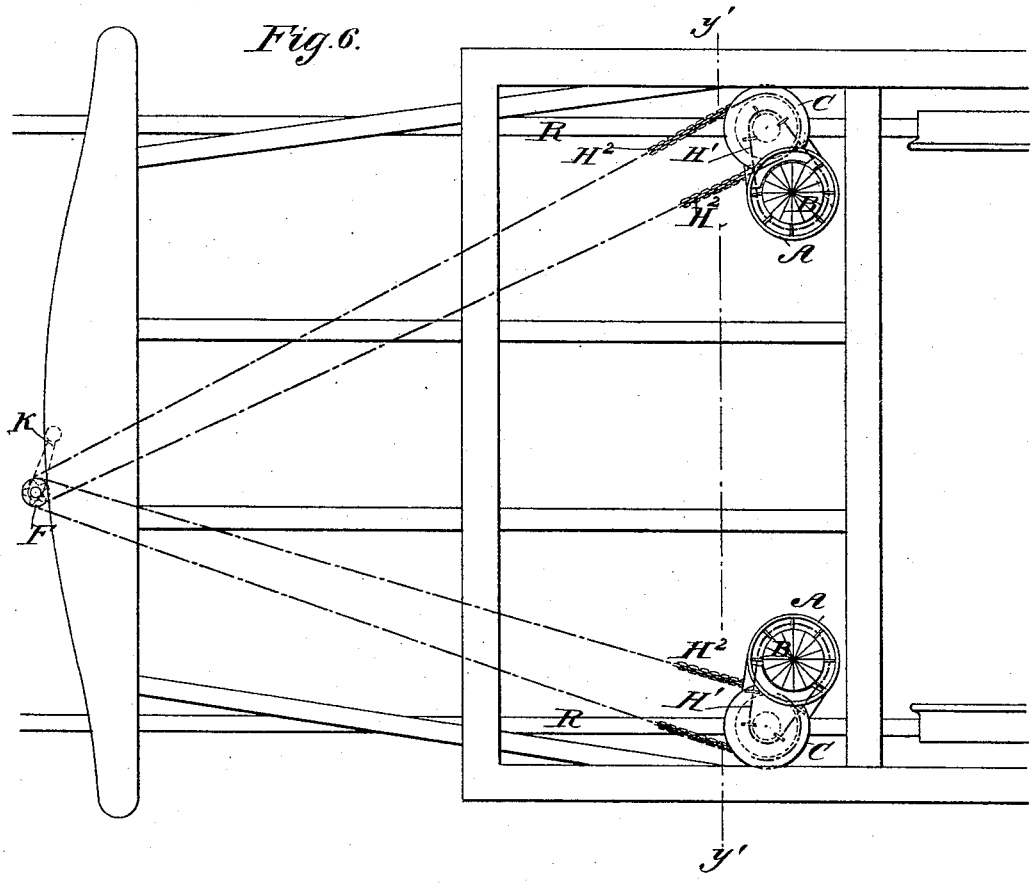
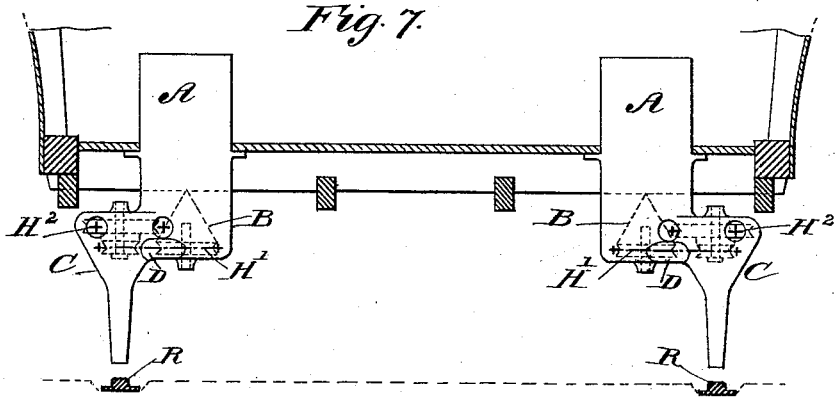


Fig. 7.



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(No Model.)

4 Sheets—Sheet 3.

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SAND BOX FOR CARS.

No. 454,182. Patented June 16, 1891.

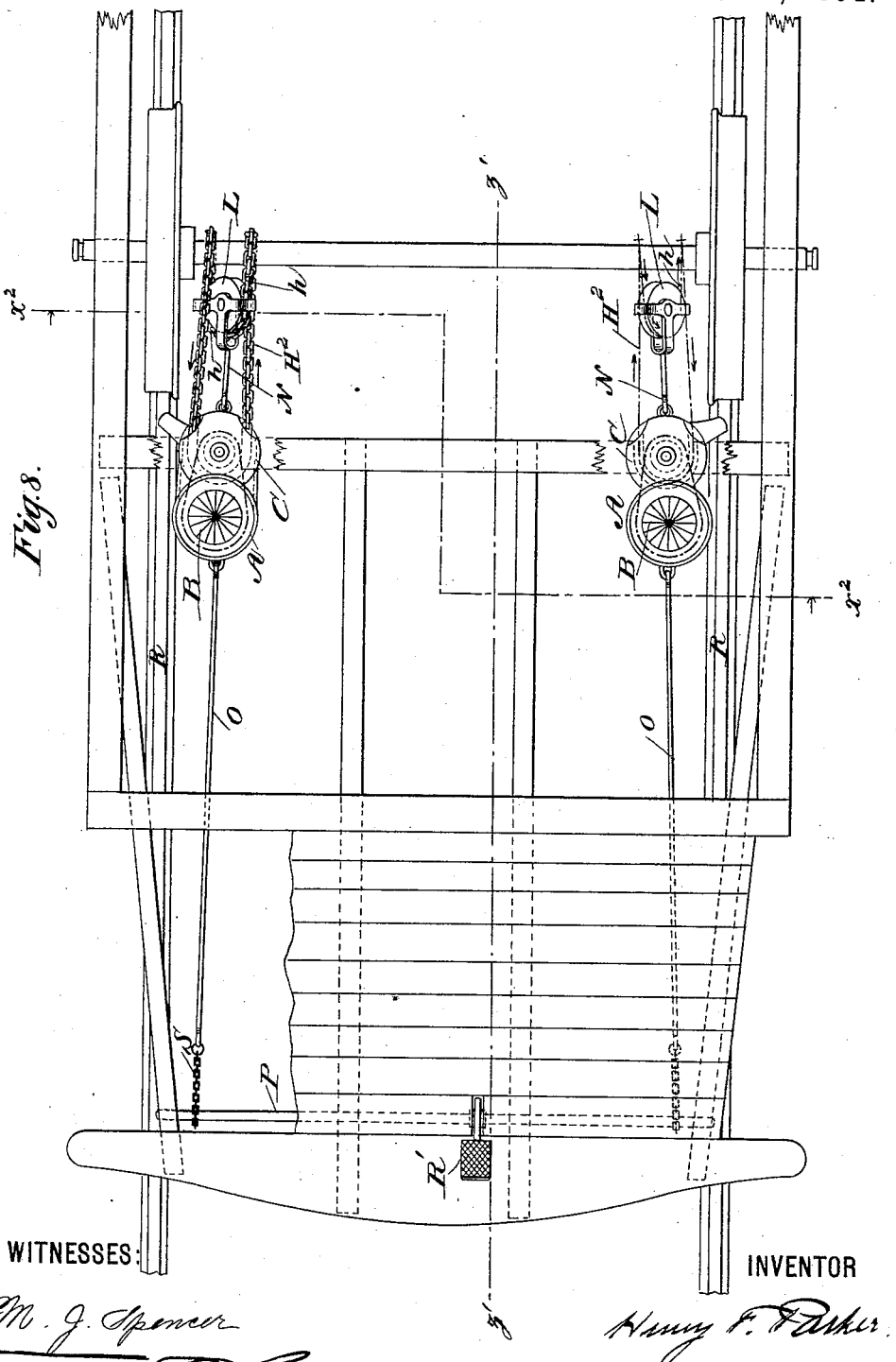

Fig. 8.

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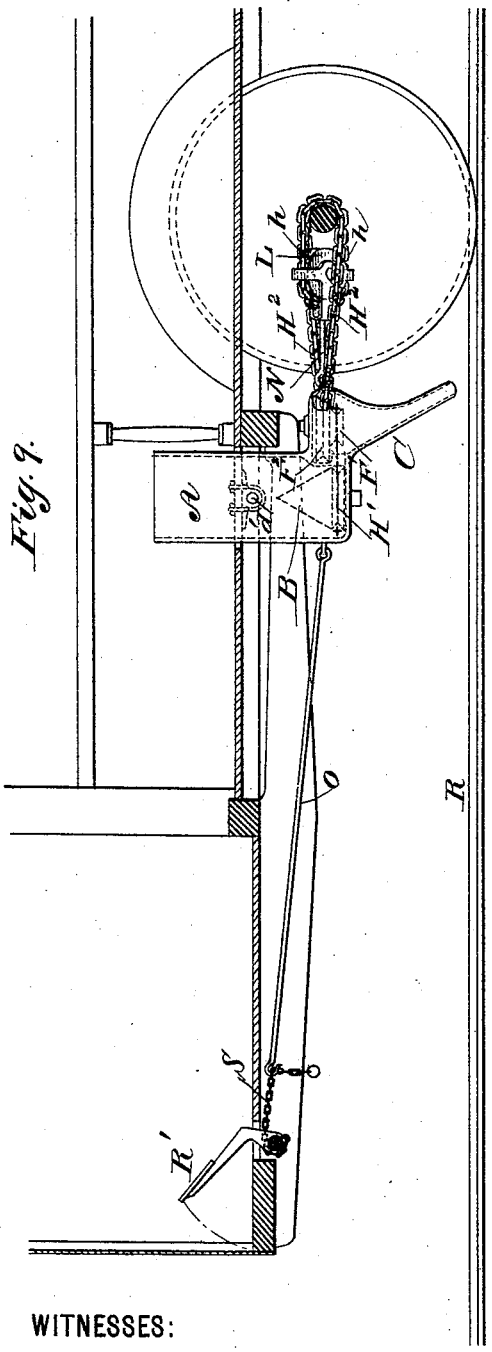
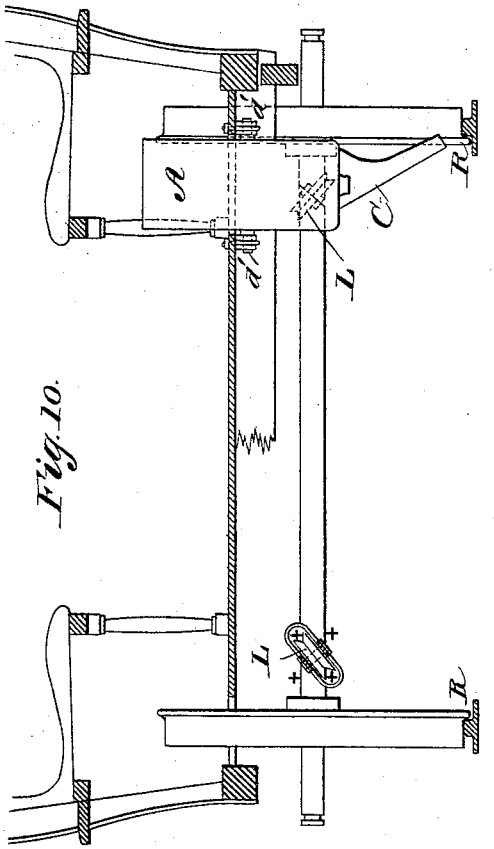
(No Model.) 4 Sheets—Sheet 4.

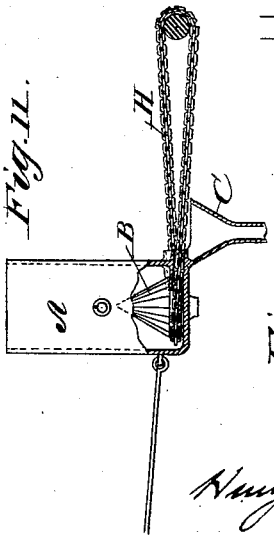
H. F. PARKER.

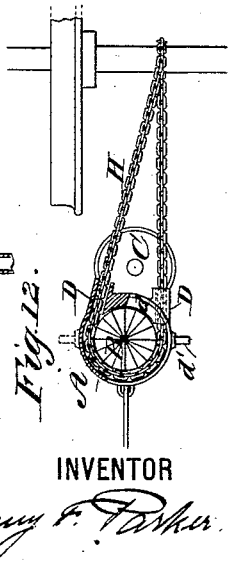
SAND BOX FOR CARS.

No. 454,182. Patented June 16, 1891.









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UNITED STATES PATENT OFFICE.

HENRY F. PARKER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO FREDERICK G. CORNING, OF SAME PLACE.

SAND-BOX FOR CARS.

SPECIFICATION forming part of Letters Patent No. 454,182, dated June 16, 1891.

Application filed May 5, 1891. Serial No. 391,655. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. PARKER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Sand-Boxes, of which the following is a specification.

My invention is applicable to street or other cars, and is designed for promoting traction in motor-driven cars or for rendering the brakes effectual in horse-cars, and it especially relates to devices of the class described in the patent applications of Frederick G. Corning, Serial Nos. 380,220 and 380,218, the purpose being to break up and pulverize the sand, if wholly or partially caked, owing to its absorption of moisture and subsequent drying or freezing when used in the situations above specified, and to deliver it positively in measured quantities.

My invention consists in providing the sand-box with a cutting-wheel supporting a body of sand, but not controlling the delivery, and in conjunction therewith a chain or flexible conveyer passing through tangential openings in the box and around the said wheel, acting thereby both as a propelling and a delivering medium.

My invention, moreover, embodies certain exterior means of propelling the chain by rotation of the car-axle, and also certain other features of construction, as hereinafter fully described, and pointed out in the appended claims.

Referring to the accompanying drawings, in which similar letters of reference indicate corresponding parts throughout the several views, Figure 1 is a vertical section taken on the line $x\,x$, Fig. 2, showing the elementary form of my invention; and Fig. 2, a horizontal section taken on the line $y\,y$, Fig. 1. Fig. 3 is a vertical section taken on the line $z\,z$ in Figs. 4 and 5, illustrating an additional feature of construction; Fig. 4 a plan view of Fig. 3, and Fig. 5 a horizontal section taken on the line $x'\,x'$ of Fig. 3. Fig. 5^a illustrates a specific construction of chain adaptable for propelling the cutting-wheel and delivering the sand. Fig. 6 is a plan view of the bed-frame of a car, illustrating the application of the sand-box as constructed in Figs. 3, 4, and 5, operated by hand; and Fig. 7, a cross-sectional view of Fig. 6, taken on the line $y'\,y'$. Fig. 8 is a plan view of the bed-frame, showing the application thereto of the aforesaid sand-box in Figs. 3, 4, and 5, driven automatically; Fig. 9, a vertical section of Fig. 8, taken on the line $z'\,z'$; and Fig. 10, a cross-section taken on the line $x^2\,x^2$, Fig. 8. Fig. 11 is a detail view showing in vertical section, taken in a plane longitudinal to the car, a direct-chain connection of the automatic sand-box to the axle of the car; and Fig. 12, a plan view of Fig. 11, shown partly in section.

Referring to Figs. 1 and 2, A represents the sand receptacle or box, comprising a vertical cylinder closed at the bottom; B, the cutting-wheel supporting the sand, rotative in a plane at right angles to the descent thereof; C, a chute or outlet exterior to the box, and D D the tubular openings tangential to the box, communicating with the chute. H represents a link-chain or other flexible conveyer having irregular surfaces or projections, and F is a propelling or driving sheave, from whence the chain H is driven in its orbit through the openings D and around the cutting-wheel B, which also forms a sheave for the chain. The grooves in the sheave F or other sheaves and in the wheel B may be suitably provided with ridges or pockets or sprocket-teeth, such as will cause the chain to adhere with the necessary friction to overcome the frictional resistance of the sand.

Figs. 3, 4, and 5 illustrate an indirect arrangement of chains $H'\,H^2$, substantially the equivalent of the direct chain H. The transmitting-sheave F′ is located within the hopper C, and a second transmitting-sheave F^2, preferably of greater diameter, increasing the power accordingly, is placed immediately above and connected with the said sheave F′. By means of the indirect construction I acquire the advantage of employing a conveyer-chain H′, having disks larger than its links, which effectively fill and shut off the tubes D D while at rest without the inconvenience of extending the disk chain to the driving source. A chain H^3, of cheaper construction or smaller size, may then be used for propelling. As will be seen in Fig. 4, the cover of

the hopper C, inclosing the sheaves F′ F², is provided with openings G, which may be located at any suitable portions of the periphery to permit the outer section of chain H² to pass at the desired angle, as variously indicated in Figs. 6 and 8. The construction of chain shown in Fig. 5ª, having disks *v*′, of a diameter equal to the breadth of the links, is applicable to the arrangement shown in Figs. 1, 2, 11, and 12, offering no obstruction to its passage around the sheave F or car-axle or other driving source. The cutting-wheel C is constructed in the form of a cone having radiating ridges or corrugations *c* or other roughened surfaces, so that the body of sand, resting upon the same with substantially its entire weight, will be agitated or ground off and fed downward toward the periphery of the wheel at the bottom of the box. The interior walls of the box A, opposite and above the wheel C, are provided with corresponding vertical ridges or corrugations *a*, which serve to prevent the sand being rotated bodily upon the wheel if caked in a solid mass. Agitating-surfaces are thus formed, converging toward the outlet, the one moving with reference to the other at right angles to the feed and corrugated with ridges *a c*, parallel therewith. The wheel C, which rotates on the stud *b* in the box, is of a diameter at its base less than that of the box, permitting the conveying-chain H or H′ also to impinge upon the sand, supplementing the different diameters of said wheel and box. The chain thus accumulates and conveys the material to and through the one or the other of the outlets D into the chute, according to the direction of rotation. It will be noted that the space *d*, opposite the portion of the wheel C not bearing the chain, is filled by an inwardly-projecting part of the box to prevent the sand wedging between the wheel and conveyer where the latter enters the box.

Referring now to Figs. 6 and 7, the cylindric boxes A A are located beneath the seats of the car, projecting through the floor at a convenient position to be replenished when necessary, and the chutes C, owing to their offset position, are vertically coincident with the track-rails R. The driving-chains H² themselves are directly connected with a small double-grooved sprocket-wheel F upon a vertical crank-shaft K, situated in a convenient position upon the dash-board of the car, similar to usual brake-levers. Thus the sand-boxes are operated by hand, and the chains may be rotated in either direction with equal effect.

Referring now to Figs. 8, 9, and 10, the boxes A are similarly situated as in Fig. 6, excepting that the chutes C are turned in a different direction for convenience of connecting the driving-chain H² to the car-axle. The chain H² is passed twice around the car-axle to increase its frictional contact thereon, and a rove *h* of the chain is carried upon a movable tension-sheave L, being drawn taut or relaxed to throw the device into and out of gear. The sheave L occupies the oblique position indicated in Fig. 10, accommodating the necessary orbit of the chain. The box A is trunnioned or swiveled to the frame of the car at *d*′ and passes through an opening in the floor of the car slightly larger than the box to permit a moderate amount of oscillation, and by the rods O and N the tightening mechanism or treadle R′ and its shaft P are connected to the box and the box connected to the tension-sheave L in the manner indicated. Thus the pressure of the foot upon the treadle R is transmitted to both boxes A A and thence to the chains, effecting frictional contact upon the axle N when it is desired to deliver the sand. Moreover, should the chute C become temporarily choked with the granulated sand, especially when slightly damp, it may be shaken out by striking the treadle R′. Again, the swiveled box-fastenings are preferable to rigid ones, leaving no parts to work loose from strains or shakings incident to rough usage. Dispensing with the advantages so derived from the movable box, the rod O may be connected directly with the sheave L by its passage through or around the box or in any suitable manner, the latter being secured rigidly to the floor of the car. A variety of tension devices well known to the state of the art may be substituted for that shown, and I do not, therefore, confine myself to any species of tightener. It is to be observed that power may be applied through a sheave on the axis of the wheel B beneath the box A in lieu of the sheave F², Fig. 3.

The same description applies to Figs. 11 and 12 as that with reference to Figs. 8, 9, and 10, excepting that the tightening-sheave L is dispensed with and the frictional contact of the chain upon the axle effected solely by the movement of the box A, and the said Figs. 11 and 12 also show the application of the direct chain H, corresponding to that in Figs. 1 and 2, to the axle.

I do not claim in my invention a sand-box provided with a movable chain having at intervals in its length a series of projections and occupying an orbit partially included in the body of sand; nor do I claim a radially-bladed wheel interposed beneath the body of sand, occupying a plane of rotation at right angles to the feed and controlling the delivery; but,

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

1. In combination, a sand-box, a cutting-wheel supporting the sand, openings in the box tangential to the wheel, and a chain or equivalent for delivering the sand, passing through the said openings and upon the periphery of the wheel.

2. In combination, a cylindric sand-box, a cone-shaped cutting-wheel having corrugated or roughened surfaces supporting the sand, openings in the box tangential to the wheel, and a chain or equivalent delivering the sand,

passing through said openings and upon the periphery of the wheel.

3. In combination, a cylindric sand-box, a cone-shaped cutting-wheel having lesser diameter at its base than the base of the box, openings in the box tangential to the wheel, and a chain or equivalent passing through said openings and upon the periphery of the wheel, supplementing the said diameters.

4. In combination, a cylindric sand-box, a cutting-wheel, openings in the box tangential to the wheel, a sheave exterior to the box, and a chain or equivalent filling the openings, supported on the sheave and the periphery of the cutting-wheel.

5. In combination, a cylindric sand-box, a cutting-wheel, tangential openings opposite the periphery of the wheel, and a depending chute opposite said openings, occupying an offset position with reference to the box, and an endless chain or equivalent having its orbit or a portion thereof included in the said box, openings, and chute.

6. In a sand-box, the combination of the cylindric receptacle, the cutting-wheel, openings in the receptacle tangential to the wheel, a depending hopper at the extremities of the openings, a sheave in the hopper, and a chain or equivalent supported on the said sheave and cutting-wheel, inclosed within the said receptacle and hopper.

7. In a sand-box, the combination of a cylindric receptacle, a cutting-wheel therein, openings in the receptacle tangential to the wheel, a depending hopper at the extremities of the openings, transmitting-sheaves in the hopper, and chains thereon extending to the cutting-wheel and to the source of driving-power, respectively, in the manner described.

8. In combination with a car, a chain-operated sand-box, substantially as described, an endless chain thereof passing in its orbit about the car-axle, and means for tightening the chain at will to effect its frictional contact with the axle, for the purposes set forth.

9. In combination with a car, a chain-operated sand-box, substantially as described, an endless chain thereof passing in its orbit about the car-axle twice, forming a rove, and a movable sheave supporting the rove and controlling the tension of the chain.

10. In combination with a car, a chain-operated sand-box, substantially as described, swiveled to permit its oscillatory motion, an endless chain thereof passing in its orbit about the car-axle, a tension-sheave for tightening the chain, a treadle on the platform of the car, and mechanism connecting the treadle with the box and the box with the sheaves, the whole co-operating in the manner set forth.

11. A sand-box provided with agitating-surfaces converging toward the outlet, the one movable with reference to the other at right angles to the direction of feed, and corrugated ridges upon said surfaces unparallel with the direction of said relative movement.

HENRY F. PARKER.

Witnesses:
M. J. SPENCER,
FREDERICK G. CORNING.