

(No Model.)

2 Sheets—Sheet 1.

J. M. McMASTER.
SAND DRIVER.

No. 463,722.

Patented Nov. 24, 1891.

Fig. 1.

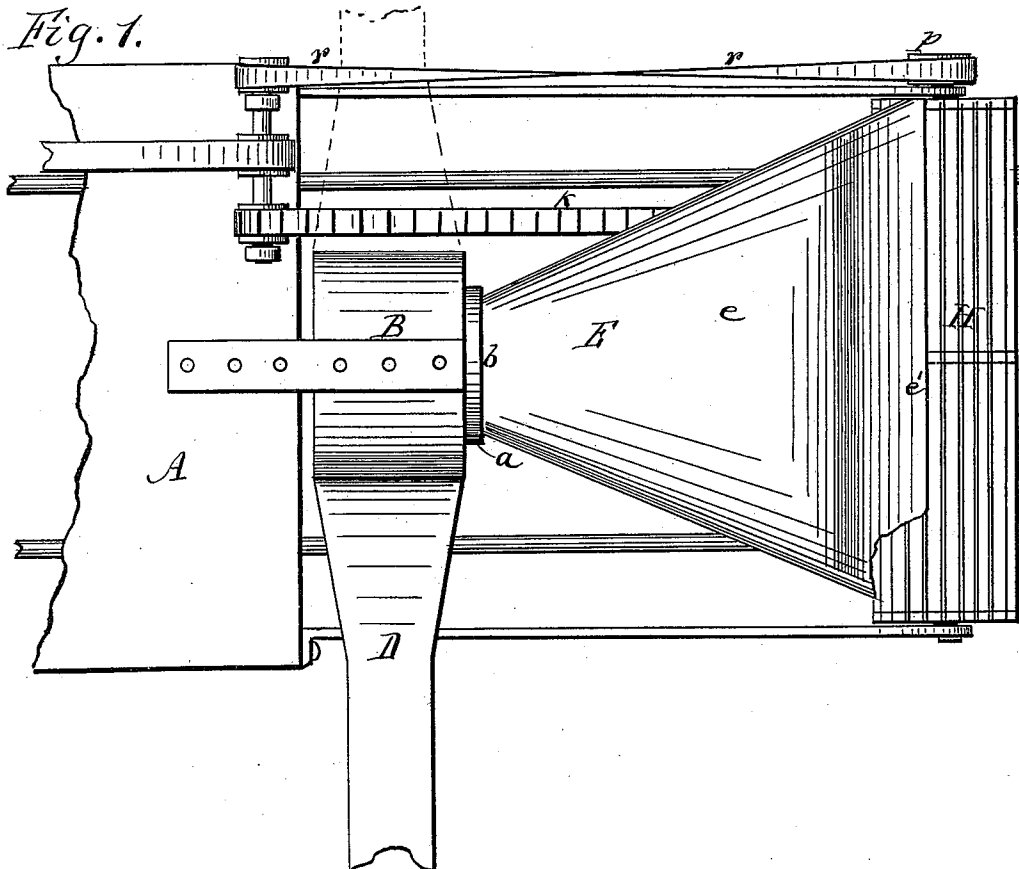
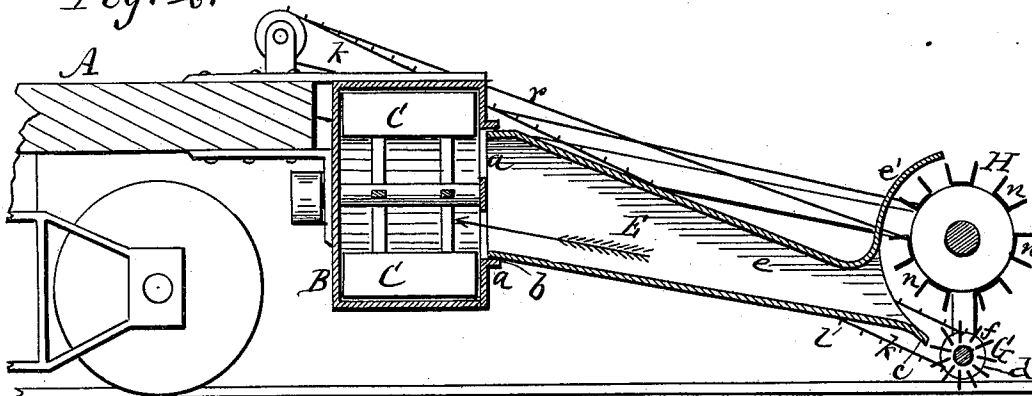


Fig. 2.



Witnesses

E. A. Adams
J. Z. Culver

Inventor

Joseph M. McMaster,
By *his Attorney*
R. F. Osgood

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Fig. 3.

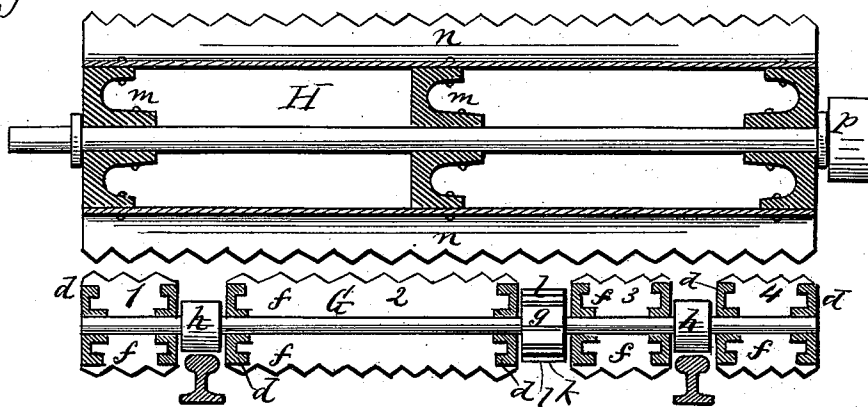
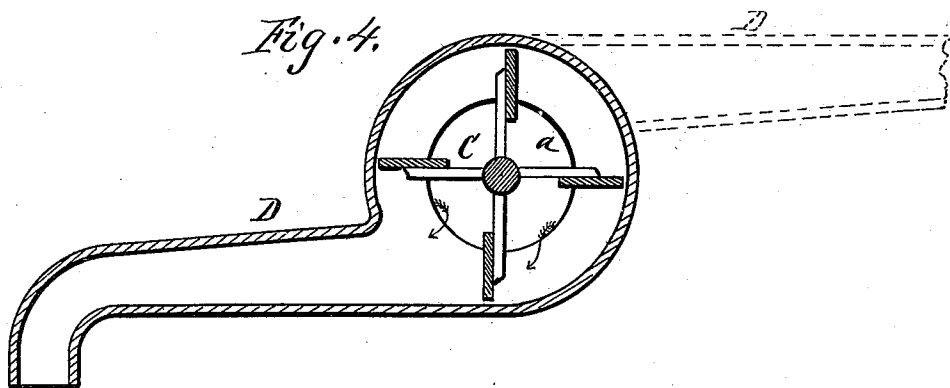


Fig. 4.



Witnesses

E. Adams
J. Culver

Joseph M. McMaster Inventor
By his Attorney
R. F. Osgood

UNITED STATES PATENT OFFICE.

JOSEPH M. McMASTER, OF ROCHESTER, NEW YORK.

SAND-DRIVER.

SPECIFICATION forming part of Letters Patent No. 463,722, dated November 24, 1891.

Application filed March 4, 1891. Serial No. 383,794. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. McMASTER, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Sand-Drivers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to apparatus for removing sand from railroads.

In some parts of the country much difficulty occurs from the drifting of sand on railroads, and it frequently collects to such depths as to seriously interfere with travel. To obviate this difficulty various devices have been experimented with, the most common being a suction-box connected with a spout designed to draw in the sand and then expel it by a blower. Such devices have been ineffectual, owing to the weight of the sand and the solid form into which it drifts, sometimes accumulating to considerable depth and presenting such a solid mass that no ordinary suction can pick it up and discharge it.

To obviate these difficulties my invention consists of an apparatus constructed and arranged as hereinafter described and claimed.

Figure 1 is a plan view showing the apparatus attached to an ordinary flat car. Fig. 2 is a central longitudinal vertical section of the same. Fig. 3 is a vertical section of the lifting and driving apparatus on an enlarged scale. Fig. 4 is a cross-section of the blower.

A indicates an ordinary flat car.

B is the blower, and C the fan located therein, the same being of ordinary construction.

D is the discharge-spout of the blower, the same extending crosswise of the car, so as to deposit the sand outside of the track. It is made of any desired length and runs, as nearly as practicable, in a straight line, so as to give as little obstruction as possible to the discharge of the sand. The outer end, however, preferably turns downward either vertically or at an angle, as shown in Fig. 4, to discharge the sand in a downward direction and to prevent wind entering the discharge end and opposing the passage of the sand. It may be made to discharge on either side by reversing the box, as indicated by the full and dotted lines, Fig. 4, or the box may be provided with

double spouts, and gates or cut-offs may be used to close either spout when the other is used.

E is a hollow conveyer for conveying the sand to the blower. The end of the box B next to the conveyer has a circular opening *a*, with which the corresponding circular end *b* of the conveyer connects and discharges the sand into the blower. From this point the body *e* of the conveyer extends forward and is gradually widened, its front end being somewhat wider than the rails, so as to catch the sand from the lifting apparatus, which is also wider than the rails, and convey such sand back to the blower. At the outer edge the conveyer has a lip or flange *c* at the bottom, which extends forward close to the lifter *G*, and on top it also has a guard-plate *e'*, which stands upright and inclines over the driver *H*, and serves as a deflector to catch the sand as it is thrown up by the lifting apparatus, causing it to fall on the lip or flange *c*, from which point it is forced back through the conveyer to the blower.

G is a lifter and H a driver standing in advance of the conveyer and serving as the lifting and driving apparatus to raise and force the sand into and through the conveyer. The lifter *G* consists of any suitable number of heads *d d* and radial wings *f f*, which are notched to fit the flanges of the heads, thus holding them in place. The edges of these wings are serrated or notched, as shown in Fig. 3, which enables them to dig into, lift, and stir up the sand more effectively, and the serrations of one plate alternate or "break joints" with those of the next, so as to reach all parts of the sand. This lifter *G* is made in a series of sections 1 2 3 4, as shown in Fig. 3. The two outer sections 1 and 4 come outside of the rails and serve to dig up the sand at these points, the wings running a sufficient distance below the top of the rails. The sections 2 3 rest between the rails, but are separated a sufficient distance to allow the pulley *g*, by which the lifter is driven, to be located between them on the shaft. The boxes *h h*, in which the shaft runs, rest in the spaces between the outer and inner sections and directly over the rails. Coming in close contact therewith, they sweep off the sand, which is then dug up by the wings on

either side. The band *k*, which runs on pulley *g*, extends back to a suitable driving-pulley on the car. This band has lags or buckets *l l* on the outer side, which dig into the sand and cut it up between the sections 2 and 3 of the lifter.

The driver *H*, which is preferably of larger size than *G*, consists of heads *m m*, and a series of wings *n n*, preferably U-shaped, bent double and riveted or otherwise attached to the heads. The edges of said wings may also be serrated or notched in the same manner and for the same purpose as those of the lifter below. The wings just clear those of the lifter in revolution. The driver has a pulley *p* at one end, around which runs a band *r*, extending to a driving-pulley on the car. The driver serves as a beater and driver under ordinary circumstances, as where the sand is thin it serves to break up and force into the conveyer such sand as is raised by the lifter; but where the sand has collected in deep drifts it also serves as a digger, and as the two turn inward in the same direction the sand is carried in between them and driven through the conveyer. Where the sand is very light the driver can be dispensed with and the lifter used alone.

By the construction before described sand can be removed from railroads even if it has gathered in deep drifts, as the driving and lifting apparatus will stir it up and drive it in and through the conveyer to the blower, where it is readily operated on by the blower and driven out with force, being driven by positive motions from start to finish, whereas the use of a suction apparatus alone is impracticable, as it cannot raise a solid body of sand. The serrations on the edges of the blades of the lifter and driver dig into and loosen up the sand and separate the particles so that

they can be drawn in by the suction. The points, being thin, are elastic, so that they will not easily break.

This invention may also be used as a snow-plow.

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

1. The combination of the blower *B*, provided with the circular opening *a*, the conveyer *E*, fitted to said blower and constructed with a body widened at its outer end to extend beyond the rails, and the lifter *G* constructed in sections, so as to reach below the top of the rails, as shown and described, and for the purpose specified.

2. The combination of the blower *B*, the conveyer *E*, the lifter *G*, and driver *H*, arranged to operate in the manner and for the purpose specified.

3. The combination of the blower *B*, conveyer *E*, the lifter *G*, driver *H*, and belt *k*, provided with the lags or scoops *l l*, as shown and described, and for the purpose specified.

4. The lifter *G*, provided with wings and constructed in sections, as described, whereby the wings are made to reach below the level of the top of the rails, as specified.

5. The combination of the lifter *G* and driver *H*, arranged one above the other, constructed with heads, and a series of wings attached to the heads and provided with serrated edges, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOSEPH M. McMASTER.

Witnesses:

W. WALLACE WILSON,
CHAS. H. HALL.