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G. NUGENT.

TRACK SANDER.

APPLICATION FILED FEB. 16, 1906. RENEWED MAY 20, 1907.

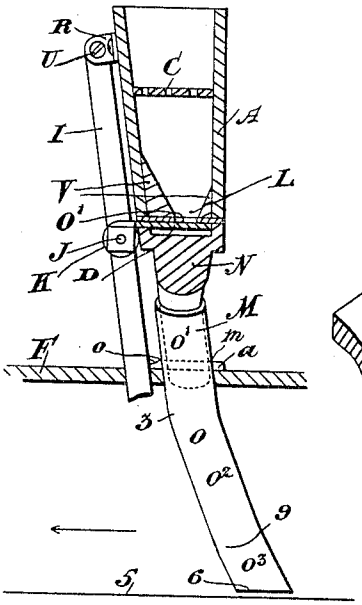


Fig. 2.

Fig. 1.

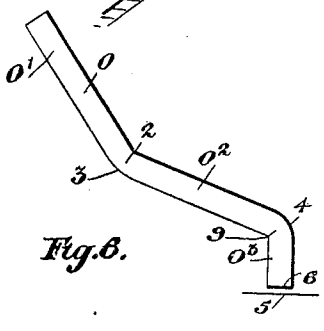


Fig. 6.

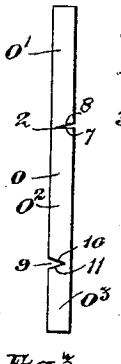


Fig. 3.

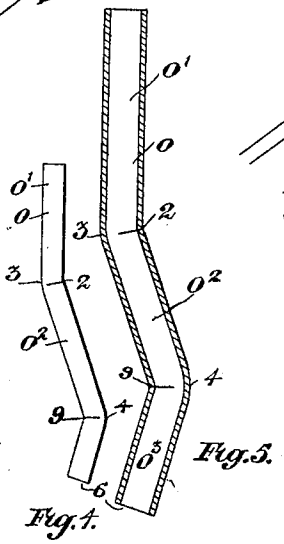


Fig. 4.

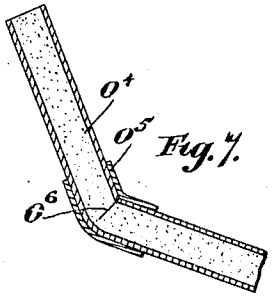


Fig. 5.

Fig. 7.

Witnesses.
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TRACK-SANDER.

No. 856,983. Specification of Letters Patent. Patented June 11, 1907.

Application filed February 16, 1906. Renewed May 20, 1907. Serial No. 374,681.

To all whom it may concern:

Be it known that I, GEORGE NUGENT, a subject of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, blacksmith, have invented certain new and useful Improvements in Track-Sanders, of which the following is a specification.

My invention relates to improvements in track sanders, and the objects of my invention are: firstly, to design a track sander that can be easily operated by the motorman or other car attendant so that the sand will be distributed or spread on the top of the rail only; secondly to design a discharge-pipe for use in connection with track sanders, or for other purposes for which it can be used, so as to prevent the choking of the sand or other material passing therethrough, and thirdly to prevent any possibility of the cut-off jamming and not closing the hopper's discharge-opening, and it consists essentially of a hopper provided with a cut-off, preferably at its bottom; one or more discharge-openings leading from said hopper so as to convey sand into one or more of the discharge-pipes placed so as to spread or lay the sand directly upon the top of the rail, and means for operating said cut-off so as to regulate the feeding of the sand onto the rail.

Figure 1 is a general perspective view of my sander, showing same attached to the front vestibule of a car, which is partly shown in section. Fig. 2 is a vertical central section through the hopper and cut-off for same, showing part of the means used for operating said cut-off. This figure also shows the preferred position for the discharge-pipe opening from the hopper. Fig. 3 is a side elevation of a pipe showing how same is cut away prior to being bent. Fig. 4 is a side elevation of the pipe shown in Fig. 3 bent into shape. Fig. 5 is an enlarged vertical central section through Fig. 4. Fig. 6 is a side elevation of one of the pipes used with my sander, showing particularly the position occupied by the lower portion thereof relative to the rail, and Fig. 7 is a vertical central section through part of a hose-pipe, showing an alternative form of my invention.

In the drawings like characters of reference indicate corresponding parts in each figure.

It is very desirable to provide street cars and other conveyances operating on rails, with a positive means for spreading or laying sand upon the rails in advance of the wheels of the conveyance.

Although not shown in the drawings, it will of course be understood that the discharge-pipes of my sander are placed in advance of the car wheels.

There are track sanders already on the market, but as far as I am aware none of these devices spread or lay the sand directly upon the top of the rails, so as to prevent the spilling of the sand onto the road-way on either side of the rail. The action of the discharge-pipes used in connection with my sander in sanding the track is substantially that of an individual's hand filled with sand and moved over the top of the track so as to permit the sand to trail out of the hand between the thumb and first finger.

If one were to sand a rail by hand as described, it will be readily understood that the sand would only be spread or laid on the top of the rails. I find that I get best results by placing the discharge-ends of the discharge-pipes close to the top of the rail so as to reduce to a minimum the distance the sand has to fall from the pipe onto the rail. The reduction of this distance prevents the momentum in the stream of sand from forcing the particles of sand laterally too far and spreading them onto the road-way.

A is any suitable hopper provided with any suitable top B. The sand, preferably dry, is placed within the hopper and passes through a sieve C held therein so as to prevent unduly large bodies contained in the sand from passing onto the rails. The sifted sand rests upon the cut-off D. When the operator wishes to sand the rails, he presses down on the lever E operating through the floor F of the car by means of the slot G constructed therein, moving the link H, connected to the lower end of said lever, in the direction indicated by arrow, thus moving outward the arm I, with which said link is connected, so as to move the cut-off D, attached to said arm by a pin J passing through the lugs K of same, so as to permit sand to pass out of the hopper through the discharge-opening L, when it passes down through the hollow branch pipes M of the casting N, which is suitably secured over the

bottom of the hopper. Upon referring to Fig. 2, it will be seen that one of the branch pipes M is shown in dotted lines. From the pipes M the sand passes into the discharge-pipes O which pass down through the floor F and in suitable position to lay or spread the sand onto the top of the rails. By relieving the pressure upon the lever E, the spring P, secured at one end to the arm I and at its other end (not shown) to the floor F, brings the parts back to normal position shown in Figs. 1 and 2, thus cutting off the further supply of sand onto the tracks.

Q is a slot in the floor F through which the arm I operates. By any suitable lugs R secured to the side of the hopper, the upper end of the arm I is pivoted thereto by a pin U passing through said arm and said lugs. By any suitable lugs S secured to the floor F and a pin T passing therethrough and through the lever E, the said lever is held in place.

In order to prevent the accumulation of sand within the hopper, I preferably construct same with a converged bottom by placing therein pieces V constructed as shown, which provide the restricted discharge opening L. Suitably secured in place above the cut-off D is a plate W provided with an opening O^1, of same size as the discharge-opening L, so as to permit sand to pass therethrough. This plate insures easy working of the cut-off D. The hopper is preferably made of wood, and the casting N of course of metal. As the plate W is preferably made of metal, it will be understood that as the cut-off O^1 is operating between two metal members, it is not likely to be jammed, as might happen were it to operate against the wood of the hopper, as the wood might more or less swell by reason of the use of wet sand.

Although any kind of pipe may be used in connection with my hopper, I prefer to use the pipe shown in the drawings and which I shall now describe. It is a very serious thing to have the sand jam in either of the discharge-pipes leading from the source of supply in the car for the sand. Now my object in connection with my pipes is to construct same so that they will have substantially a uniform bore throughout. At the knee or elbow-portions thereof the transverse diameter of the pipe may be somewhat larger than the transverse diameter of the unbent portions of the pipe, but this will be no drawback as there will be no danger of the sand choking at these points. By making the pipes out of one piece I am enabled to dispense with couplings. When these couplings are used, it will of course be understood that they constrict the passage-way through the pipe by forming ledges against which the sand lodges, and if it is at all damp, jamming the pipe. Now by means of my method of construction of pipe the sand will have a clear passage-way therethrough as there are no flanges or other obstructing parts extending on the inside of the pipe.

When I wish to make a bend in the pipe, I cut out therefrom on the side opposite to where the bend is to be, a certain amount of material bearing relation to the angle at which the pipe is designed to be bent, thus providing a cut 2. I then preferably heat the pipe at this portion and bend it until the edges of the cut 2 abut as shown in Figs. 4 and 5, thus providing a knee or elbow 3. To obtain the bottom turn in the pipe, I cut the pipe away in the proper position after the manner before described, and bend the pipe, preferably when heated, so as to provide the knee or elbow 4.

Upon referring to Figs. 1 and 2, it will be noticed that the longitudinal axis of the pipes M extend at an outward-backward angle from the hopper. Now when my pipes O are connected to the hopper by means of the pipes M, it will of course be understood that the longitudinal axis of the upper portions O^1 of said pipes will also extend at an outward backward angle to said hopper. The intermediate portions O^2 of the pipes O are bent so that their longitudinal axis will occupy an outward backward position relative to the longitudinal axis of the upper portions O^1.

Upon referring to Figs. 1, 2, 5 and 6, particularly Fig. 6, it will be seen that the lower portion O^3 is bent so that its longitudinal axis will occupy a position parallel to the vertical plane of the rail, and a downward backward inclined angle relative to the longitudinal axis of the intermediate portion O^2. The discharge-end 6 of the discharge-pipes is cut off or constructed so that the plane of said discharge-end will be preferably parallel with the top of the rail 5 over which it is passing. Besides this construction of the discharge-end, it is placed as close as possible to the top of the rail so as to reduce to a minimum the distance the sand has to fall from the pipe onto the rail. The reduction of this distance, as before mentioned, prevents the momentum of the stream of sand from forcing the particles of sand laterally, and spreading them onto the road-way on each side of the rail. In other words, the stream of sand is kept confined for the longest possible time before being laid or spread along the rail.

By constructing a discharge-pipe with three portions, and supporting the pipe so that the longitudinal axes of these portions will occupy approximately the position shown in Fig. 2, I am enabled to trail the stream of sand along the rail with the best possible results. As the sand passes from the upper portion O^1, it will be understood

that its momentum will be considerably retarded when it strikes the commencement of the intermediate portion O^2, and as this intermediate portion is bent at a greater angle than said upper portion, it will be understood that the momentum of the stream of sand passing therethrough will be further retarded, thus preventing the particles of sand moving with too great a velocity when they enter the lower portion O^3.

It will be understood that if the upper portion O^1 were extended down straight to within a short distance of the rail, the velocity of the particles of sand would be so great as to carry the greater number of particles beyond the sides of the rail. Furthermore, as the rail is very hard and polished, the striking of the particles of sand thereagainst when they are not properly controlled, causes them to rebound onto the road-way on either side of the rail. By means of my pipes, I am enabled to deposit the particles of sand upon the rail with the least possible momentum consistent with the maintenance of a clear passage through the pipes. Therefore, there will be no chance of the particles of sand rebounding from the rail when deposited thereupon through my discharge-pipes.

It will of course be understood that when I use piping made of material soft enough to be bent without heating, such as lead piping, I can dispense with heating the pipe.

Upon referring to Fig. 3, it will be noticed that the side 7 of the cut 2 is parallel with the ground, and that the side 8 thereof is cut inward at a downward-sloping angle. At 9 I show a cut, the sides 10 and 11 of which are cut respectively at a downward-inward and upward-inward angle. The angle at which the cuts just described are made is of course immaterial. It will of course be understood that more material will be removed or cut out from the pipe when I wish to give same a sharp bend than when I wish to give same a slight bend. The pipes are preferably cold when the material is cut thereoutof to provide notches for the purpose before described.

According to the construction shown in the drawings, the upper portions of the discharge-pipes O fit over the pipes M. In order to hold them in place, the pipes O and M are constructed with holes *o* and *m* respectively in each side through which pass the pins *a* suitably secured by screws *b* or other means to the floor F. By the attaching-means just described for the discharge-pipes O it will be understood that same can be quickly and easily placed or removed.

Upon referring to Fig. 7 will be seen an alternative form of my pipe. In this figure the pipe O^4 is an ordinary rubber hose and it has been cut away at O^6 so as to permit it to be bent. By means of an elbow O^5, or any other suitable means, the rubber pipe O^4 is permanently held in the bent position.

I hereby claim that changes in construction may be made in my invention without departing from the spirit thereof.

What I claim as my invention is:

1. In a device of the class described, the combination with a hopper; a cut-off controlling discharge-opening thereof, and means for operating said cut-off; of one or more bent pipes opening from said hopper and below said cut-off, each being formed or made by cutting or punching a suitable amount of material from one side of the pipe and then bending the pipe until the edges of the notch abut, the longitudinal axis of said bent portion of said pipe occupying an outward-backward position relative to the longitudinal axis of the other portion of said pipe, and a bend made, as before described, in said bent portion, so that the longitudinal axis of the last-mentioned bent portion will occupy a position parallel to a vertical plane and at a backward-inclined angle to the longitudinal axis of the bent portion of said pipe immediately forming an integral part thereof.

2. In a device of the class described, the combination with a hopper; a cut-off controlling discharge-opening thereof, and means for operating said cut-off; of one or more bent pipes opening from said hopper and below said cut-off, each being formed or made by cutting or punching a suitable amount of material from one side of the pipe and then bending the pipe until the edges of the notch abut, the longitudinal axis of said bent portion of said pipe occupying an outward-backward position relative to the longitudinal axis of the other portion of said pipe, and a bend made, as before described, in said bent portion, so that the longitudinal axis of the last-mentioned bent portion will occupy a position parallel to a vertical plane and at a backward-inclined angle to the longitudinal axis of the bent portion of said pipe immediately forming an integral part thereof; the discharge-end of said pipes being cut off or constructed so that its plane will be parallel with the plane over which the pipe may be moved.

3. In a device of the class described, the combination with a hopper; a cut-off controlling discharge-opening thereof, of one or more pipes for controlling sand along a way opening into said hopper and constructed of two or more portions, the longitudinal axes of which bear such inclination to each other and to the surface of said way that the sand passing therethrough will be trailed therefrom as it is moved.

4. In a device of the class described, the combination with a hopper; a cut-off controlling discharge-opening thereof, of one or more pipes for controlling sand along a way

opening into said hopper and constructed of two or more portions, the longitudinal axes of which bear such inclination to each other and to the surface of said way that the sand passing therethrough will be trailed therefrom through the discharge-ends of the pipes which are cut off or constructed so that their plane will be parallel with the surface of the way.

5. In a device of the class described, the combination with a hopper provided with a constricted discharge-opening, and a cut-off controlling said discharge-opening, of a member adapted for connection with the bottom of said hopper and integrally provided with two outwardly-extending hollow pipes, and pipes coöperating with said hollow pipes provided with a lower portion, the longitudinal axis of which lies substantially in a plane parallel to the vertical plane of the rail, and at a forward-inclined angle in the direction of movement of the car so that the sand will be trailed onto the rail.

6. In a device of the class described, the combination with a hopper provided with a constricted discharge-opening, and a cut-off controlling said discharge-opening, of a member adapted for connection with the bottom of said hopper and integrally provided with two outward-backward-extending hollow pipes, and pipes fitted over said outward-backwardly-extending pipes so that their longitudinal axes will be on a line with the longitudinal axes of said outward-backwardly-extending pipes; the intermediate portion of said pipes being formed so that their longitudinal axes will occupy an outward-backward position relative to the longitudinal axis of the upper portion of said pipes, and the lower portion of said intermediate portions being formed so that its longitudinal axis will occupy a position parallel to a vertical plane of the rail, and a backward-inclined angle relative to the longitudinal axes of said intermediate portions.

7. In a device of the class described, the combination with a hopper provided with a constricted discharge-opening, and a cut-off controlling said discharge-opening, of a member adapted for connection with the bottom of said hopper and integrally provided with two outward-backward-extending hollow pipes, and pipes fitted over said outward-backwardly-extending pipes so that their longitudinal axes will be on a line with the longitudinal axes of said outward-backwardly-extending pipes; the intermediate portion of said pipes being formed so that their longitudinal axes will occupy an outward-backward position relative to the longitudinal axis of the upper portion of said pipes, and the lower portion of said intermediate portions being formed so that its longitudinal axis will occupy a position parallel to a vertical plane of the rail; a backward-inclined angle relative to the longitudinal axes of said intermediate portions, the discharge-end of said lower portions being cut off or constructed so that its plane will be parallel to the top of the rail over which it is passing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE NUGENT.

Witnesses:
L. G. SHARPE,
F. MCDERMOTT.