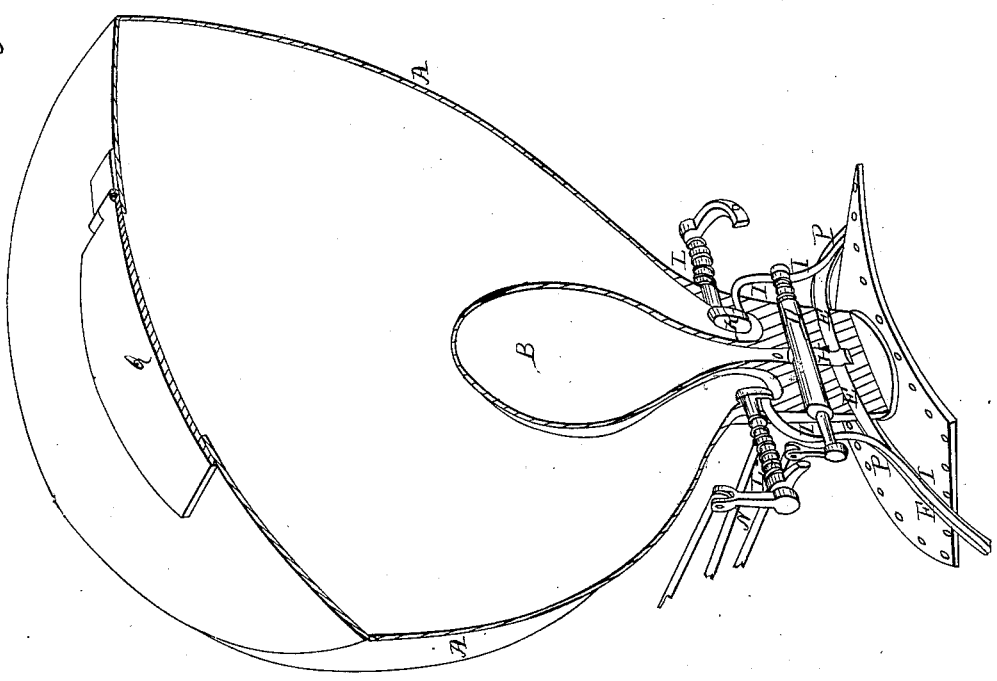
2 Sheets-Sheet 1.

E. Tolles,

Locomotive Attachment.

No. 2,283. Patented Oct. 9, 1841.

Fig. 1



2 Sheets-Sheet 2.

E. Tolles,

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Fig. 2.

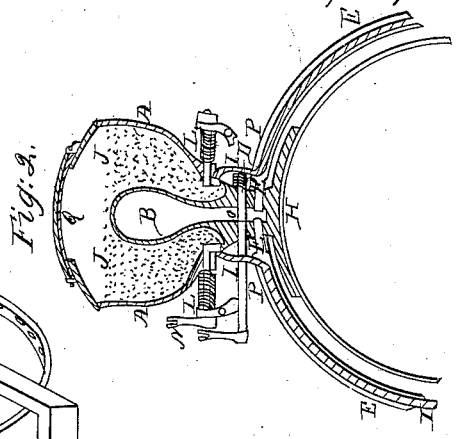
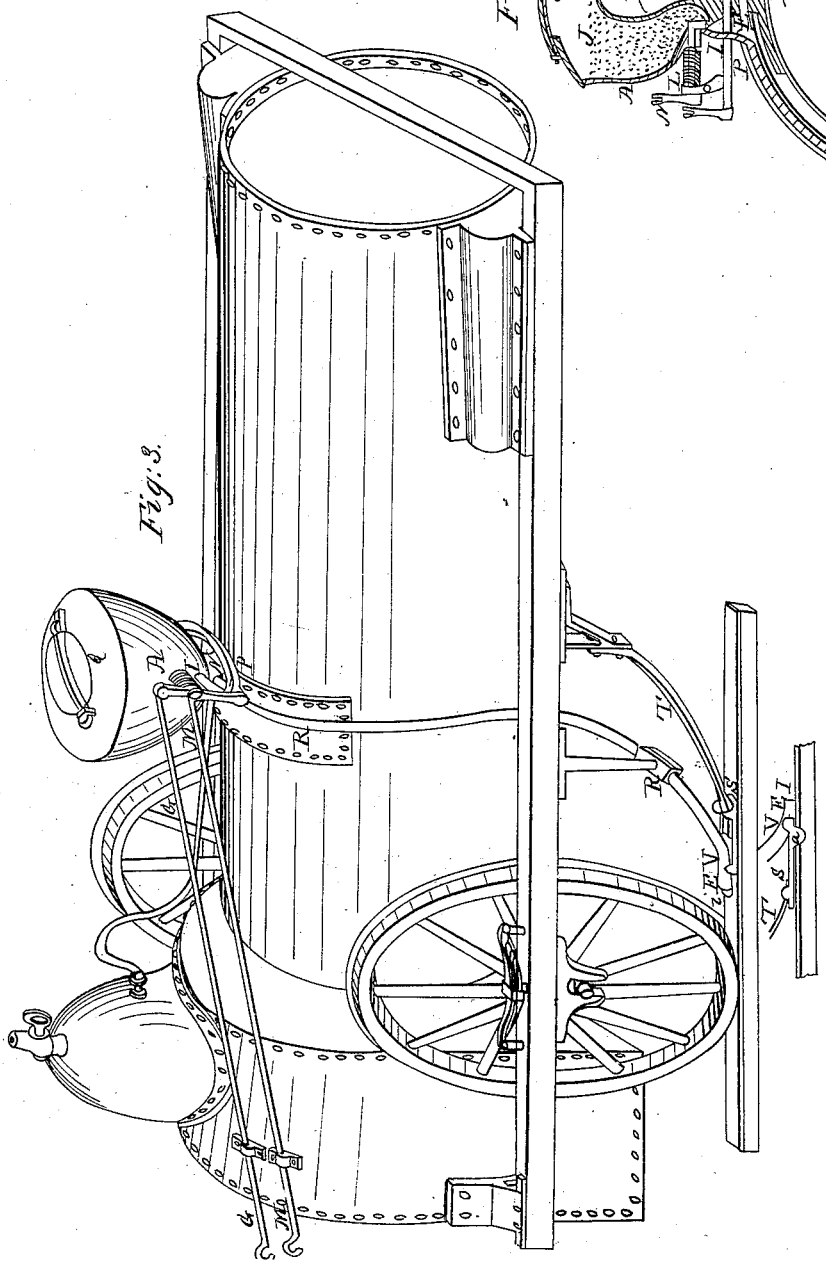


Fig. 3.



UNITED STATES PATENT OFFICE.

ELISHA TOLLES, OF NEW YORK, N. Y.

APPARATUS FOR DISTRIBUTING SAND, &c., TO PRODUCE ADHESION OF DRIVING-WHEELS OF LOCOMOTIVES.

Specification of Letters Patent No. 2,283, dated October 9, 1841.

To all whom it may concern:

Be it known that I, ELISHA TOLLES, of the city of New York, in the State of New York, have invented a new and improved apparatus for causing the driving wheels of locomotive engines to adhere to the rails, so as to enable them to ascend such elevations in the road, the ascent of which is frequently rendered difficult, or altogether prevented, by snow, grease, or other articles on the rails; and I do hereby declare that my said improved apparatus consists of a reservoir for steam, and another for sand, situated on the top of the boiler, and having pipes, or tubes, descending from them to the rails, in such manner as that by their conjoint action the sand shall be regularly distributed on the rails; there being also combined with the said apparatus two plows or scrapers, so constructed and arranged as to cause them to remove snow or other foreign matter from the rails in advance of the points where the sand is to be distributed; and I do further declare that the following is a full and exact description thereof.

In the accompanying drawing, Figure 1, is a perspective view of a locomotive steam engine with my apparatus affixed thereon; and Fig. 2, is a transverse vertical section through the reservoirs for steam and for sand, together with a part of their appendages. In each of these figures, where like parts are represented they are designated by the same letters of reference.

A, A, is a hopper, or reservoir, for containing sand, and within this there is another reservoir B, for containing steam, which reservoir is surrounded by the sand in the hopper.

In the drawing Fig. 2, the steam reservoir is represented as oval, but I intend, in general, to make it in the form of two cones joined together at their bases, or larger ends; this, however, is not a point of importance.

C, is a steam tube, or pipe, leading from the steam chamber of the boiler, into the lower part of the steam reservoir B, by which it is kept supplied with steam.

D, is the plug, or key, of a cock the socket of which is formed in the neck, or lower portion, of the steam reservoir.

E, E, are two steam tubes into which steam will be admitted from the steam reservoir B, when the plug, or key, D, of the cock is so turned as to cause the opening through it to coincide with the opening E, in the neck of said reservoir. The hopper A, is placed upon the boiler so that its center shall be a little in advance of the forward part of the driving wheels, in order that the tubes descending from said hopper may lead directly down toward the point where their operation is required. These steam tubes extend down on each side of the boiler, terminating at E′, just above the center of each rail, and a little in advance of the part over which the tread of the wheel is passing.

G, G, is a rod by which the shaft H, may be turned, of which shaft the plug D, of the cock makes a part; by the aid of this rod the entrance of steam into the pipes E, E, is governed.

I, I, are two pipes through which the sand J, J, contained in the hopper, is to be allowed to pass; these pipes enter the sides of the hopper, and are covered by valves K, K, which are attached to rock-shafts L, L. The valves K, K, consist of flat plates which cover the openings of the tubes I, I; and through each of these plates a hole is drilled which coincides with the openings of the said tubes; by this means the size of the openings into the tubes, for the admission of sand, may be graduated at pleasure, the openings being entirely stopped by the imperforated parts of the valve plates, or partially or wholly opened by means of the perforations. The rock shafts L, L, are represented as having spiral wire springs wound around them, and this is for the purpose of keeping the valves K, K, up to their bearings.

M, is a rod attached to the arm N, of one of the rock shafts; and O, O, is a bow, embracing the ends of both of these shafts, so that when one is moved the other will move also. The two pipes I, I, through which the sand is to pass, after leaving the hopper enter the steam tubes E, E, the tubes E, E, being perforated through their sides, as at P, P, to admit them. The tubes I, I, must be considerably smaller than E, E, as they are to pass along the whole length of the latter, surrounded by the steam. The openings in E, E, through which P, P, enter, are secured by soldering. The top of the hopper is made convex, or crowning, to throw off rain, and it has a hinged cover Q, for the admission of the sand, but not fitting so

closely as to prevent the entrance of air, or the escape of steam, which latter arises from the drying of the sand by the heat of the steam reservoir, an effect which it is necessary should be produced to insure the free and uniform flow of the sand.

The sand pipes extend down to or near to the termination of the steam pipes, and as the forcible exit of the steam produces a partial vacuum at the mouths of the sand pipes, the expansion of the air intermingled with the sand will cause the latter to flow, even should the engine be at rest, and consequently there be no vibratory motion to shake it out. The pipes E, E, are held in place by metal plates, or holdfasts, R, attached to the side of the locomotive.

S, is one of the plows or scrapers, intended to clear the rails from snow, or other foreign matter. They should be made of sheet metal, standing edgewise, and should swell out at the middle to a little more than the width of the rail. At their fore ends they should rise in a curve from the rail, so as to pass over any accidental protuberances. They are attached to an elastic piece of metal T, by which they are borne down upon the rail; and from their inner sides a piece of metal projects down from them so as to rub against the inner side of the rail, as shown at *a*, Fig. 3, which shows the inner side. The piece of metal T, is made to spring a little outward as well as downward, and by this action the plows are kept to their proper bearings. When their action is not required they may be raised and hooked to the side timbers of the locomotive, or be kept up by other means, so as not to bear upon the rails. The plows or scrapers are made at their rear ends V to embrace the pipes E, by which the respective parts are kept in place. The apparatus represented is shown as attached to a locomotive having two driving wheels only, but where this number of driving wheels is greater, the manner of adapting it to such increased number of wheels will be obvious to every machinist. The plows or scrapers, in this case need only to be applied to the forward wheels.

Having thus fully described the nature of my invention and shown the manner of carrying the same into operation, what I claim therein as new, and desire to secure by Letters Patent, is—

The manner of constructing and combining the apparatus for the distribution of sand upon the lines of rails on railroads, by the conjoint action of reservoirs of steam and of sand, the sand to be placed in a reservoir, or hopper, containing within it the steam reservoir from which the steam is allowed to issue through pipes, or tubes, surrounding those through which the sand is made to issue, by an arrangement of parts substantially the same with that set forth.

I also claim the combining with the apparatus for distributing the sand, the scrapers or plows, for clearing the rails from snow, or other foreign matter, said scrapers being attached to elastic arms of metal, and otherwise formed, arranged, combined, and governed in the manner described.

It will be manifest that instead of passing a current of steam through the outer pipe or tube, to cause the sand to be discharged from the inner tube, a strong current of air, either heated or not, may be forced through the outer tube, and that a like mechanical effect would be thereby produced. Such a blast may be derived from a blowing apparatus of any suitable kind, such as are well known, and often used with locomotives; and I therefore claim the substituting in the apparatus herein described a blast of air for the current of steam.

ELISHA TOLLES.

Witnesses:
THOS. P. JONES,
JOHN FINLAY.