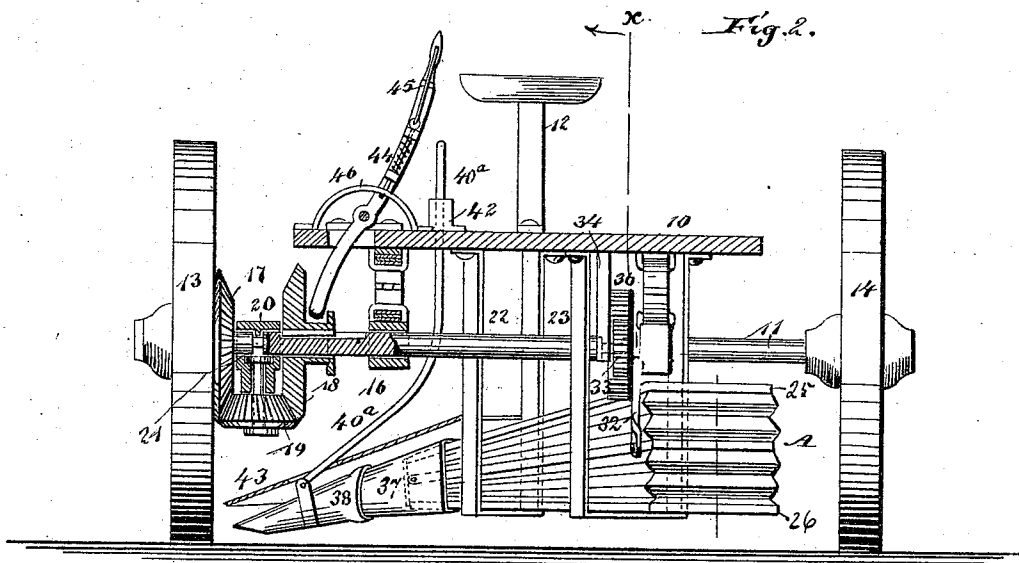
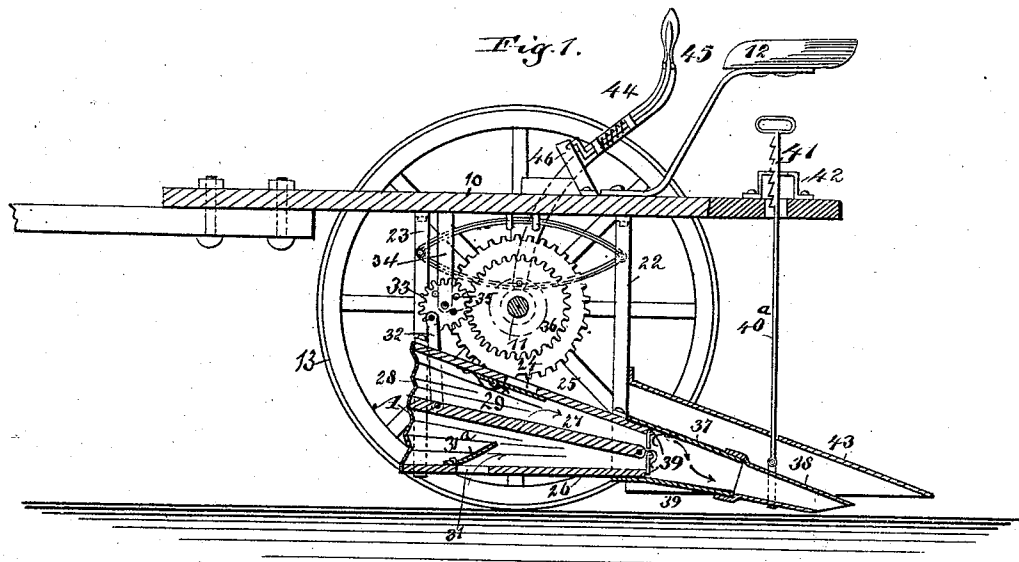


(No Model.)

J. J. ASTOR.
PNEUMATIC ROAD CLEANING MACHINE.

No. 514,805.

Patented Feb. 13, 1894.



WITNESSES:

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JOHN JACOB ASTOR, OF NEW YORK, N. Y.

PNEUMATIC ROAD-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 514,805, dated February 13, 1894.

Application filed May 31, 1892. Serial No. 434,951. (No model.)

To all whom it may concern:

Be it known that I, JOHN JACOB ASTOR, of New York city, in the county and State of New York, have invented a new and Improved Pneumatic Road-Cleaning Machine, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for cleaning streets or roads, being more particularly adapted for the latter purpose, and has for its object to construct a machine which will be light, simple, economical and durable, and capable of producing a current of air of a strength and uniformity sufficient to blow all dust or other matter lying in the road, into the bushes or over the fences adjacent to its sides, or of laying the dust practically in windrows at the sides of the road, leaving the road for a major portion of its width free from any loose material.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in both the views.

Figure 1 is a longitudinal section through the machine, the section being taken practically on the line $x-x$ of Fig. 2. Fig. 2 is a transverse section through the shifting mechanism, a portion of the axle and the rear part of the platform, and Fig. 2 likewise illustrates a longitudinal section through the shield used in connection with the air blast mechanism.

In carrying out the invention the body 10 of the machine, which is preferably made of the platform character, is supported in any approved manner upon an axle 11, the said platform being preferably adapted to carry a seat 12. The axle is provided with traction wheels 13 and 14, they being loosely mounted upon the axle. The wheel 14, is simply a supporting wheel, while the wheel 13, is adapted as a support and as a driver. To that end the wheel 13, is provided upon its inner face, preferably, with a miter gear 17; and a facing similar gear 18, is splined upon the axle and is capable of a limited longitudinal movement thereon, as is best shown in Fig. 2, this latter gear being manipulated

through the medium of a hand lever 44, connected with its hub, and extending upward through an opening in the platform, the lever 55 being pivotally attached to the platform, or an adjacent support, and is provided with a thumb latch 45, or its equivalent, adapted for engagement with a rack 46, or other form of keeper. The rack, however, is ordinarily used, and is usually located upon the platform.

Motion is transmitted from the beveled gear 17 to the shifting gear 18 through the medium of an intervening beveled pinion 19. This pinion is hung from a hanger 20 carried by the axle in any manner known to the art, the connection being so effected, however, that the axle may turn freely and independently in the hanger, while the hanger is prevented from having lateral movement, one means of accomplishing this result being shown in Fig. 2. It is necessary that the pinion 19, should be in constant engagement with the gear 17. Thus it will be observed that when the shifting gear 18, is brought into mesh with the pinion 19, the axle will be revolved; but when the gear 18, is carried out of engagement with the pinion, the motion of the axle will be stopped.

The cleaning of the road is to be pneumatically accomplished through the medium of an air-blast, and this air blast is shown in the drawings as obtained through the medium of a bellows A, of the double-acting type; that is, the bellows when operated is adapted to provide for a continuous blast or current of air. The bellows may be supported in any suitable or approved manner; in the drawings brackets 22 and 23, are employed for that purpose, and they are secured to the platform. The bellows stands diagonally with reference to the platform and to the wheels 13 and 14, the nozzle of the bellows being ordinarily placed adjacent to the driver 13.

In the construction of the bellows the top and bottom boards or plates 25 and 26, are rigidly attached to the brackets or other supports provided; and between the top and bottom boards an interior pivoted partition 27, is about centrally located, which is adapted to be moved to and from the said top and bottom boards. A flexible material 28, as is usual, constitutes the sides and one end of

the bellows, the other end being open, and two openings are provided, leading one into the upper and the other into the lower compartment of the bellows, and the pivoted partition 27, is connected with the flexible side and end covering of the bellows in any approved manner. The upper board 25, is provided with an opening 24, normally closed by a valve 29, spring pressed or otherwise, and located upon the inner face of the said upper board, while the lower board 26, is provided with an opening 31, normally covered by a valve 31^a, and this valve is likewise attached to the inner face of its board. The direction of the air passing through the valves and the openings in the bellows is indicated by arrows in Fig. 1. The partition 27, is operated through the medium of a link 32, and this link is adjustably and pivotally connected with a pinion 33, journaled in any suitable support 34, projected downward from the platform.

The adjustable connection is made as follows: In the pinion a series of openings 35, is produced, located at different distances from the center, and according to the opening 35 employed or utilized in making the connection between the link and the pinion more or less throw will be given to the pivotal, central compartment of the bellows. The pinion is rotated by meshing with a gear 36, mounted upon the axle 11; but I desire it to be distinctly understood that any train of gearing may be employed to regulate the rapidity of the operation of the bellows with respect to the revolution of the axle that may be demanded by the size of the bellows to be employed.

The nozzle 37 of the bellows is provided with a supplemental nozzle 38 connected therewith, the nozzle 38 being capable of movement vertically, or it may be carried in direction of either side of the machine, as in practice may be found desirable.

As the bellows is a double-acting one, two openings lead from it into the nozzle 37, as has been heretofore stated, and these openings are normally covered by a valve 39, of any approved form, but the valves open outward and are usually pressed by springs 40.

The adjustment of the auxiliary nozzle 38 of the bellows may be effected in many ways. One means by which it may be accomplished is through the medium of a rod 40^a, which is attached to the supplemental or auxiliary nozzle, and the rod passes upward through the opening in the platform 10, being provided on one face with a rack 41 to engage with a keeper 42, attached to the platform. By this construction the auxiliary nozzle 38 of the bellows may be placed and held at the desired distance from the ground.

In order that the dust may not fly upward as it is blown from the road by the action of the bellows, a hood 43 is made to cover both the nozzle proper and the auxiliary nozzle of the bellows, and through this hood the rod 40^a, is projected upward.

In operation, when the shifting gear has been carried in a direction to mesh with the pinion 19, the axle revolves and the bellows is set in operation, and it is obvious that at this time, as the machine is carried along the road, the bed of the road will be completely cleared of dust, or any light or loose foreign matter lying thereon, by means of the air blast emanating from the bellows. It is also evident that without injury to the road bed the light foreign matter or loose particles of dust lying thereon may be blown from the road bed in direction of or into the shrubbery or over the fences along the line of the road, leaving the road bed intact, and that the operation of cleaning is accomplished both expeditiously and conveniently.

It is obvious that a machine constructed as above described is not only simple and durable in construction, but it is also exceedingly economical and capable of being effectively used, and that the dust or material to be removed from the road need not necessarily be blown over the fences adjacent to the road but may be permitted to lie adjacent to the ditch and be afterward removed. At all events, after the machine has been passed a number of times over the road the road bed will be entirely freed from all loose particles. It is further evident that the hood, while preventing the dust from being blown upward also materially aids in insuring the particles blown from the road being carried directly to their proposed destination.

In the form of main and auxiliary nozzle, shown in Figs. 1 and 2, both may be of metal or the main nozzle only may be of that material, the other being made of rubber or other flexible material.

I desire it to be understood that I do not claim specifically the construction of the bellows.

The form of the bellows shown in the drawings and incidentally described in the specification constitutes no portion of the present case, since separate application for a patent therefor has been made, filed January 19, 1893, Serial No. 458,972.

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

1. In a machine of the character described, the combination, with an axle and traction or supporting wheels mounted upon the axle, of an apparatus capable of discharging currents of air, a movable nozzle connected with the apparatus and capable of being directed toward or away from the ground, and a driving connection between the blast apparatus and one of the supporting or traction wheels of the machine, as and for the purposes specified.

2. In a road cleaner, the combination, with the axle, of an apparatus capable of discharging currents of air, the discharge end of which is capable of being moved, a driving connection between the blast apparatus and the axle, and a shifting mechanism con-

nected with the discharge end of the blast apparatus, as and for the purpose specified.

3. In a road cleaning machine, the combination, with the axle, of a bellows of the double-acting type, a driving mechanism connecting the bellows with the axle, an auxiliary nozzle movably mounted upon the bellows, and a shifting mechanism connected with the auxiliary nozzle, as and for the purpose set forth.

10 4. In a road cleaner, the combination, with an axle and a bellows, of a driving mechanism connecting the bellows with the axle, a mov-

able nozzle connected with the bellows, a shifting mechanism connected with the movable nozzle, and a hood partially surrounding the said nozzle, said hood serving to guide the material removed from the road in a proper direction, as and for the purpose set forth. 15

JOHN JACOB ASTOR.

Witnesses:

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