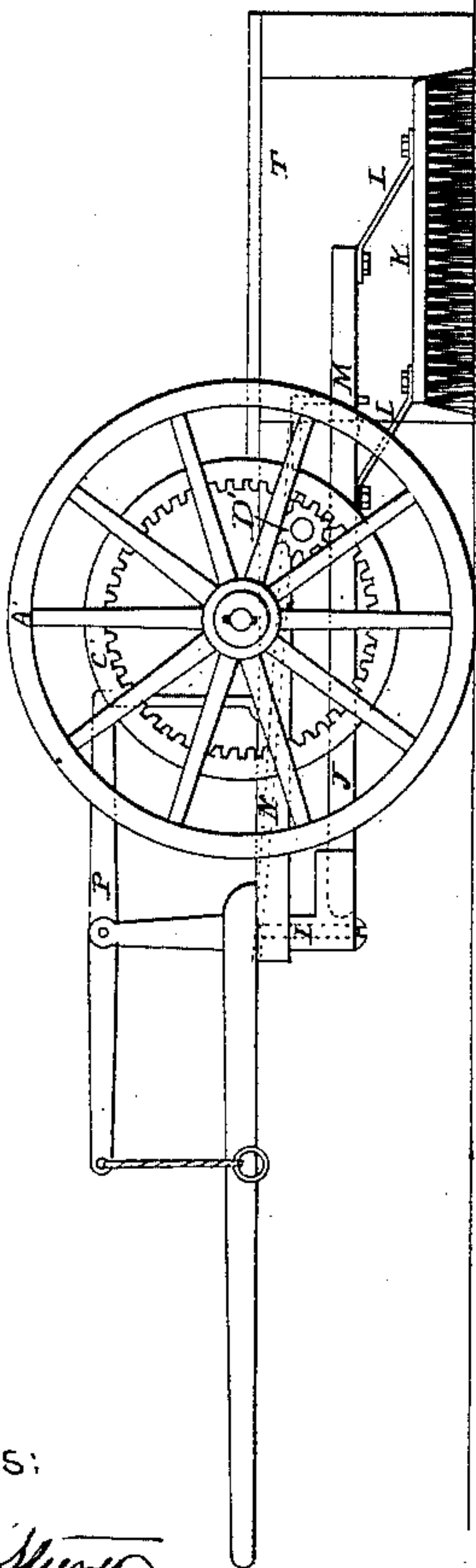


S. EMLÉN.  
STREET SWEEPING MACHINE.

No. 46,094.

Patented Jan. 31, 1865.

Fig. 2.



Witnesses:

*Isaac H. Stevens*  
*Edw. D. Young Jr.*

Fig. 3.

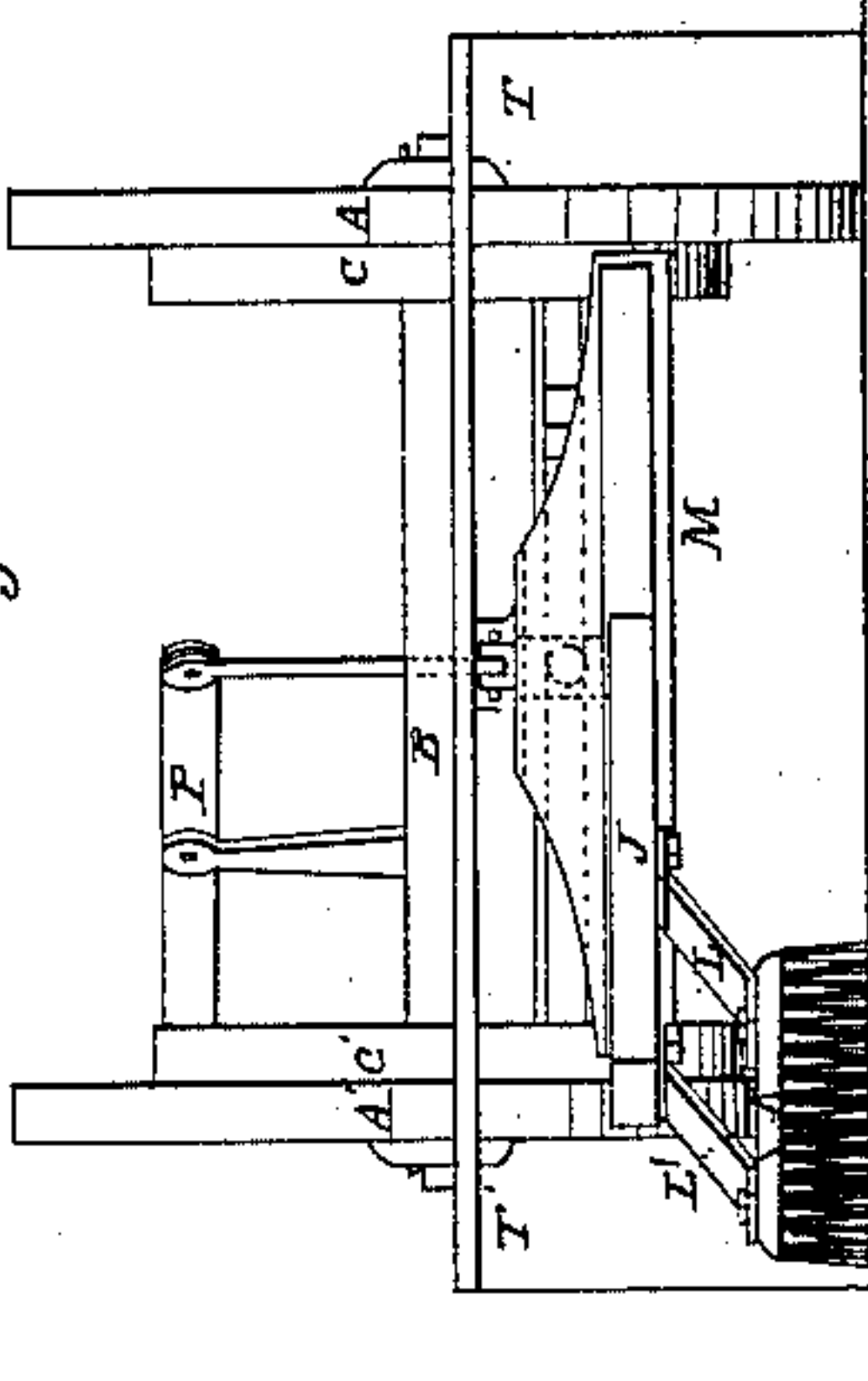
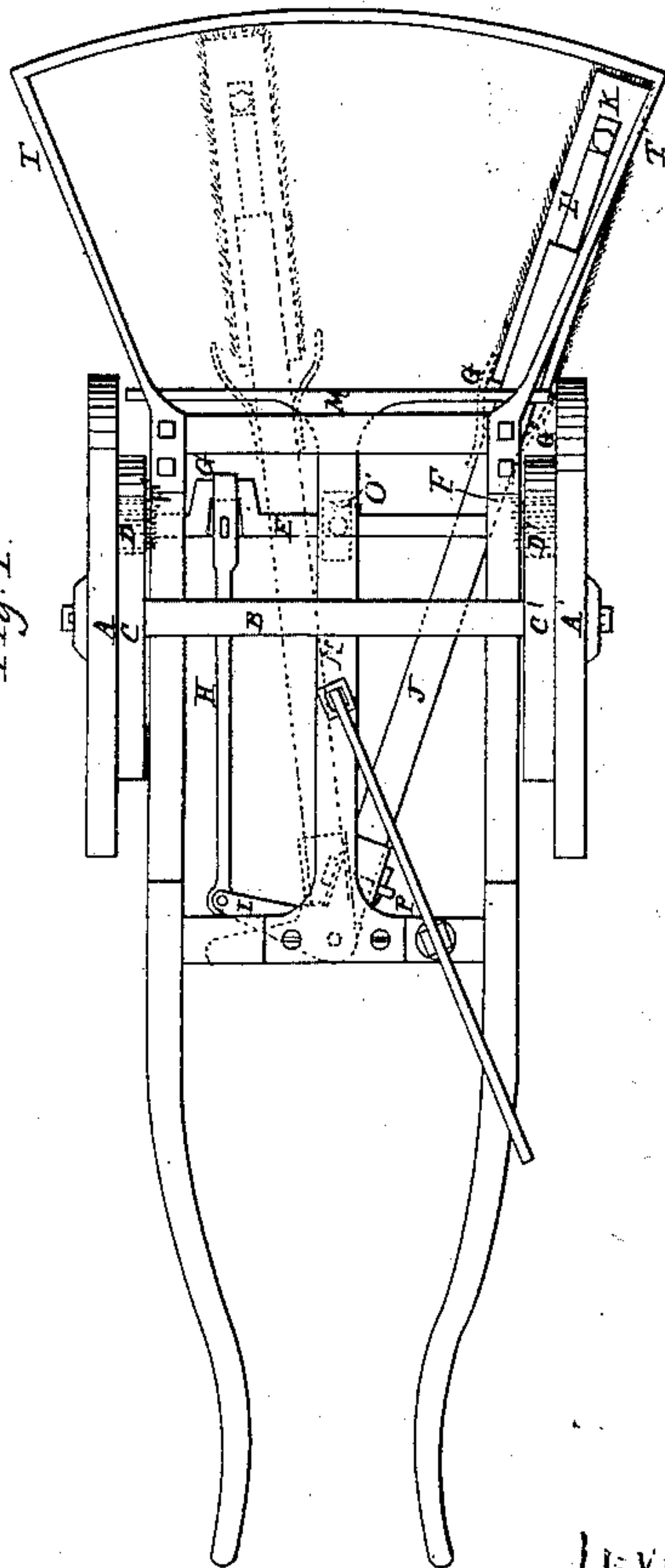


Fig. 1.



Inventor

*Saml. Emlén*

# UNITED STATES PATENT OFFICE.

SAMUEL EMLLEN, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN STREET-SWEEPING MACHINES.

Specification forming part of Letters Patent No. 46,094, dated January 31, 1865.

*To all whom it may concern:*

Be it known that I, SAMUEL EMLLEN, merchant, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Machine for the Purpose of Sweeping Streets and Highways; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and the letters of reference marked thereon.

The nature of my invention consists in so attaching a brush to a vehicle that the brush is vibrated by the rotation of the wheels in its progress along the road, and during the vibration of the brush it receives other motions, which are hereinafter more fully explained, which tend to the more efficient cleansing of the roadway and the greater durability of certain of the wearing parts of the machine, and at the same time avoiding the dispersion of dust by the operation of the machine.

Figure 1 represents a plan, Fig. 2 represents a side elevation, and Fig. 3 represents a rear elevation, of the machine. Fig. 4 exhibits the cam for operating the lifting motion of the brush, as will be found more fully explained hereinafter.

A and A' are the two wheels of the vehicle. B is the axle. C and C' are internal gear-wheels secured to and rotating with the wheels A and A'. D and D' are pinions upon the cranked shaft E, gearing into and receiving rotatory motion from the internal-gear wheels C and C', and imparting rotary motion in one direction when the vehicle progresses by means of the ratchets F and F' to the crank-shaft E. The crank G in the shaft E operates a connecting-rod, H, which moves an angle-lever, I, bearing upon the arm J a brush, K, which is connected to the arm J by means of the springs L and L'. This arm J is attached to the other portion of the lever I by means of a hinged joint, so as to permit the arm J and the brush K, attached thereto, to be raised and lowered. The framing of the vehicle and shafts may be of any of the known forms without materially modifying the construction or operation of the machine.

The arm J of the lever I is supported by the slide M, which is fastened upon the lever N, and is raised and lowered by means of the

cam O upon the crank-shaft E, and can also be raised and lowered by means of the lever P, controlled by the driver of the vehicle. Upon the sides of the arm J, in such a position as to strike the ends of the slide M, are placed springs Q and Q', which, striking upon the ends of the slide, produce a jarring effect upon the brush, the effect of which motion is to shake out any dirt that may be adhering to the bristles of the brush. Upon each side of the machine are suspended aprons T and T', which prevent mud or dust from being thrown sidewise beyond the path of the machine.

The operation of the machine is as follows: Upon driving forward upon a road the wheels rotate, and by means of the gearing already described rotate the crank-shaft, which causes the brush to vibrate by means of the lever I and connecting-rod H, and sweeps several times over the same ground by reason of the length of the brush being such as to cover several times the space traveled by the machine in one revolution of the crank-shaft, and thus brushes more effectually in the interstices of the pavement.

The arm J and brush K are raised at such intervals by means of the cam O, so that the brush K is raised clear of the ground during its motion from the extremes of its vibration to its center of vibration, and is in contact with the ground during its motion from the center of vibration to the extremes of its vibration, and thus the dirt which may be on the ground is swept into rows on each side of the machine, from which it may be conveniently gathered and carted away. The arm J of the lever I, in vibrating, strikes, by means of the springs Q and Q', upon the ends of the slide and jars the dirt that may be adhering to the bristles loose, and the dirt is thus thrown against the aprons, whence it falls into the rows of dirt in the road.

When it is desired to pass over any portion of road without sweeping it, the brush may be raised by means of the lever P, and when the vehicle is backed the brush is allowed to rest by means of ratchets F and F' allowing the pinions D and D' to be rotated without imparting motion to the crank-shaft, and when one wheel of the machine revolves more rapidly than the other, as in turning a curve, the ratchets relieve the crank-shaft



from torsional strain by permitting the crank-shaft to rotate with the pinion, which has the highest velocity in a forward motion, without compelling the other pinion to rotate any faster than the internal-gear wheel, into which it gears, moves it. The function of the springs L and L' for attaching the brush to the arm J is to accommodate the brush to inequalities in the level of the roadway.

In the operation of the machine as I have hereinbefore described it the following novel and useful peculiarities are observable: First, that the brush is made to act in both directions, thus avoiding a permanent set of the bristles, or their equivalent, in one direction, as is found to be the case in machines with rotating brushes; second, that the same ground is brushed over several times by different parts of the brush, thus sweeping all parts traveled over by the machine, even although a portion of the brush may be defective; third, that the brush is raised at regular intervals during its vibration, so that the dirt is swept from the center to the sides of the path traversed by the machine; fourth, that the brush is raised and jarred at each extreme of its vibrations; fifth, that the dirt thus shaken from the brush is prevented from annoying others traveling upon the road by means of the aprons or curtains covering the flanks of the machine.

What I claim as my invention, and desire to secure as such by Letters Patent, is—

1. The vibrating brush having a rising and-falling motion, as hereinbefore set forth.
2. The mode of driving the said brush by means of the pinions and ratchets upon the crank-shaft.
3. Jarring the brush at the extremes of its vibrations as herein set forth and described.
4. So proportioning the gearing of the machine to the diameter of the wheels and length of the brush that the same surface shall be repeatedly swept substantially in the manner herein set forth and described.
5. Combining the aprons upon the flanks of the machine with a vibrating brush having lifting and jarring motions, as described.
6. Attaching the brush to the vibrating beam or arm by means of springs in the mode and with the effect described.
7. The device for lifting the brush from the street-pavement by the hands of the attendant without stopping the motion of the machine when said brush is vibrated and operated substantially in the manner hereinbefore set forth and described.

SAML. EMLLEN.

Witnesses:

ISAAC H. STEEVER,  
J. H. GRAHAM.