B. J. NOLAN & J. PHARAND.

STREET SWEEPING MACHINE.

APPLICATION FILED SEPT. 26, 1910.

1,043,533.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.

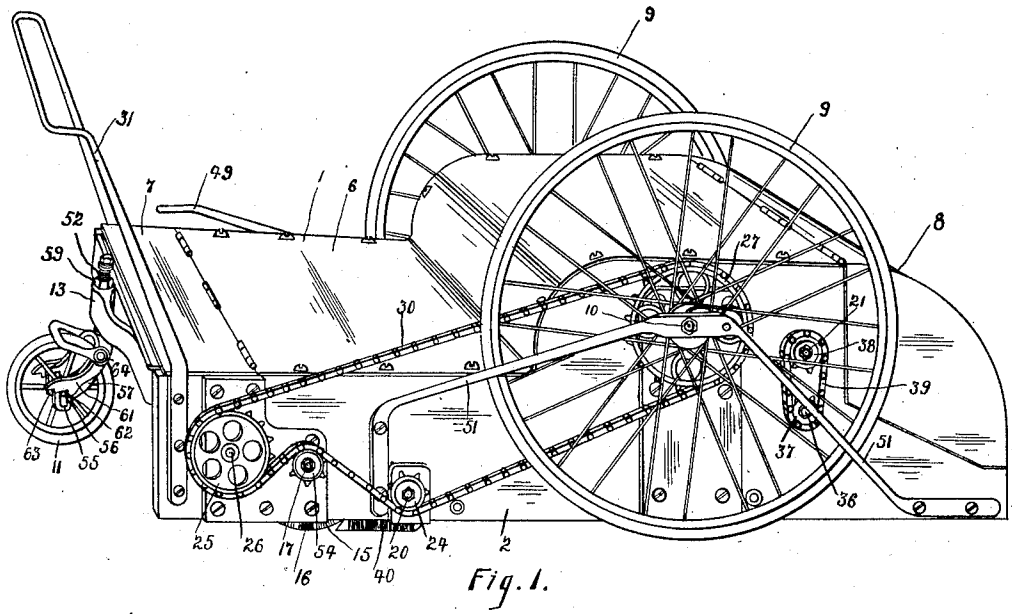

Fig. 1.

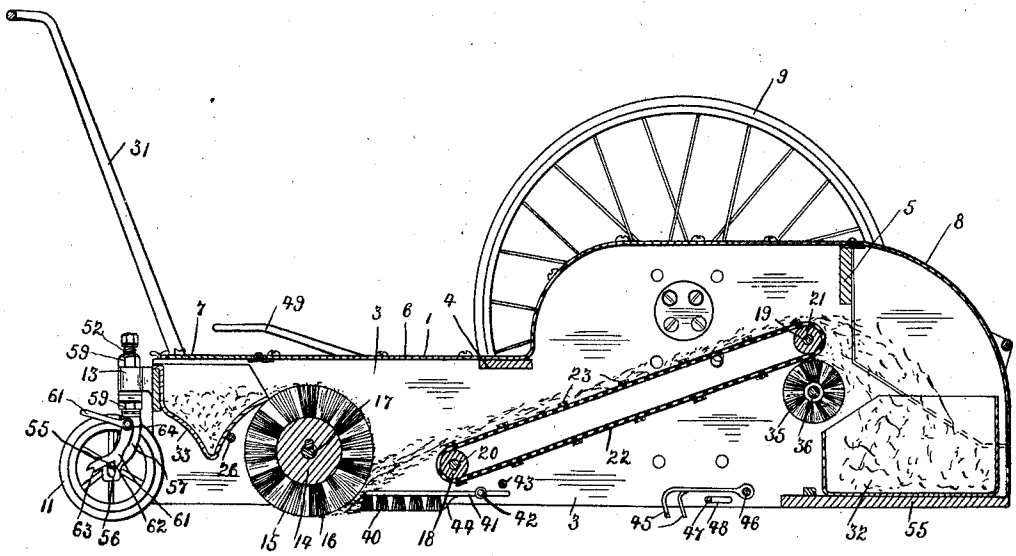

Fig. 2

Witnesses

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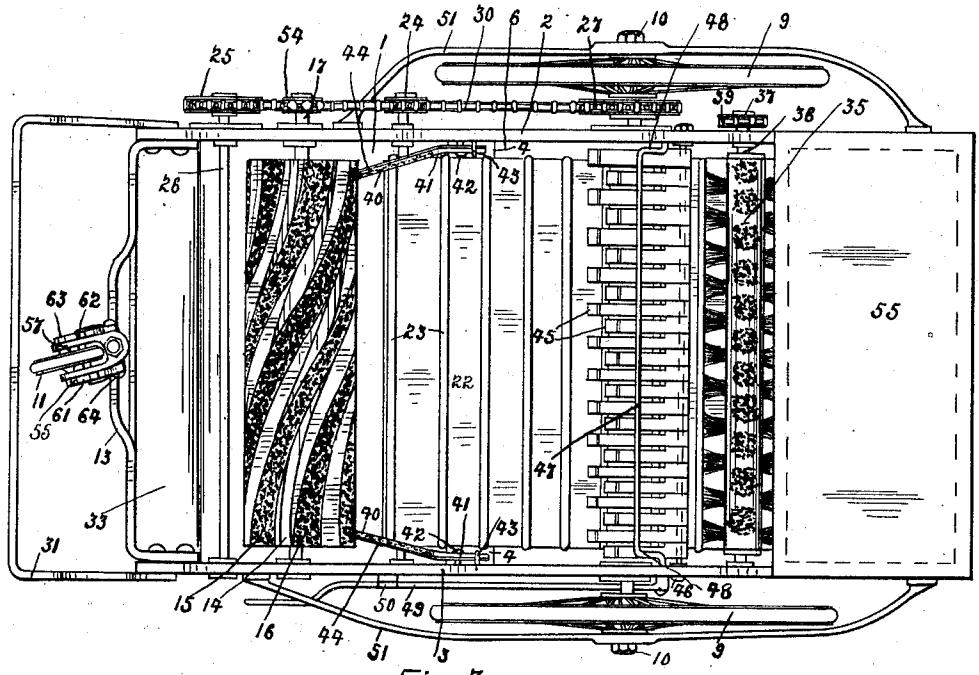

Fig. 3.

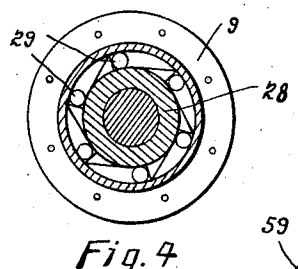

Fig. 4

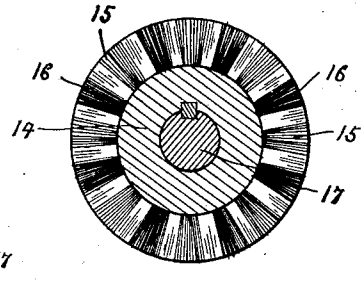

Fig. 5.

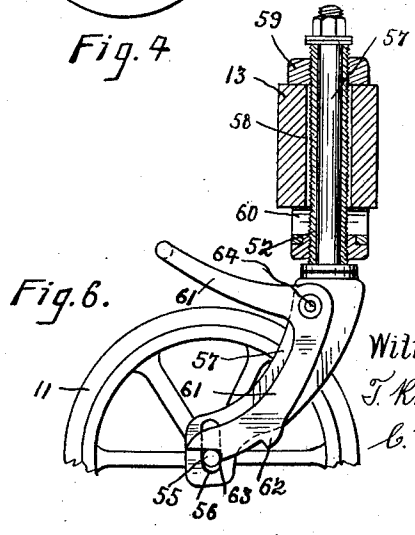

Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

BERNARD JOSEPH NOLAN, OF OTTAWA, ONTARIO, AND JOSAPHAT PHARAND, OF HULL, QUEBEC, CANADA.

STREET-SWEEPING MACHINE.

1,043,533. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed September 26, 1910. Serial No. 583,981.

To all whom it may concern:

Be it known that we, BERNARD JOSEPH NOLAN, electrician, and JOSAPHAT PHARAND, general merchant, both subjects of the King of Great Britain, and residents, respectively, of the city of Ottawa, in the Province of Ontario, and of the city of Hull, in the Province of Quebec, both in the Dominion of Canada, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

The invention relates to improvements in street sweeping machines as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially of the novel construction and arrangement of parts, whereby a rotating brush and an endless carrier, upon which the dirt is swept, are operatively connected to a driving wheel, and inclosed within a suitable boxlike casing supporting a plurality of scrapers for loosening the dirt on the surface to be swept, as also side brushes to guide the dirt before the rotating brush, and means for cleaning the endless carrier.

The objects of the invention are to devise a street sweeper of inexpensive design, which will be light in construction, and readily moved over the surface to be swept, and to so arrange the carrier that no dirt will fall therefrom back onto the surface being swept.

In the drawings, Figure 1 is a perspective view of the sweeper. Fig. 2 is a longitudinal sectional view of the sweeper. Fig. 3 is a plan view from the under side of the sweeper. Fig. 4 is an enlarged cross sectional detail view of the clutch combined with the hub of the driving wheel. Fig. 5 is an enlarged vertical sectional detail view of the trailer wheel swivel. Fig. 6 is an enlarged cross sectional view of the rotary sweeping brush.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 is the casing of the sweeper, comprising the side pieces 2 and 3 connected a suitable distance one from the other by cross pieces 4 and 5.

6 is the cover having the hinged ends 7 and 8.

9 are a pair of driving wheels rotatably mounted on the studs 10 projecting from the sides 2 and 3 adjacent to the front thereof, and forming the main running gear of the sweeper.

51 are brace bars secured to the sides 2 and 3, and extending across the wheels 9 on the outside thereof, the studs 10 passing through the brace bars and firmly supported thereby.

11 is a trailer wheel journaled on the pin 55 extending through the slots 56 in the fork 57. The fork 57 is swivelly arranged in the tube 52, having the exterior periphery thereof threaded and extending through the orifice 58 in the cross bar 13, said cross bar forming the rear brace of the frame of the sweeper.

59 are keeper nuts threaded onto the tube 52 above and below the cross bar 13.

60 is a spring having an orifice through the center thereof, and fitted on the tube 52 between the bar 13 and the lower nut 59.

61 is a forked cam lever, having the notches 62 and 63 in the end of the forks. The cam lever 61 is pivoted at 64 to the fork 57, and is of sufficient length to hold the pin 55 at the bottom of the slots 56, when the notches 62 are set over the said pin, otherwise the pin being at the top of the said slots 56 allows the fork 57 with the rear end of the sweeper supported thereby to lower close to the pavement and in normal working position. By this simple means the rear of the casing may be raised with the sweeping brush as hereinafter described quite clear of the pavement, or if desired a little pressure downward will spring the casing closer to the pavement than when in its normal position as supported on the trailer with the pin thereof to the notch 63.

14 is a sweeping brush preferably having the rows of bristles 15 of steel or stiff cane, and the alternate rows of bristles 16 of a softer nature, such as fine broom straw or hair. The rows of bristles 15 and 16 are furthermore arranged spirally around the periphery of the hub, whereby only a short section of each row of bristles is in contact with the surface being swept during the rotation of the brush, making the same much easier to rotate, and also more effectually sweeping the pavement, the stiff bristles sweeping the heavy dirt, and the lighter ones the dust. It may also be here mentioned that additional pressure can be given the sweeping brush on the pavement by pressing

downwardly on the rear of the casing against the action of the spring 60 on the trailer wheel, so that the stiff bristles will bear firmly on the pavement.

17 is the shaft of the brush fixedly secured in the hub thereof, and rotatably arranged in suitable bearings in the side pieces 2 and 3.

54 is a sprocket secured on one end of the shaft 17, where it extends outside the side piece 2.

18 and 19 are rollers, having the respective shafts 20 and 21 extending therethrough, and journaled in suitable bearings in the side pieces 2 and 3 of the casing. The roller 18 is journaled in the casing toward the bottom thereof immediately in front of the brush 14; while the roller 19 is journaled toward the front of the casing and at the top thereof.

22 is an endless belt carrier extending around the rollers 18 and 19, and having the cross strips 23 secured to the face thereof, and extending from side to side of the casing.

24 is a sprocket wheel secured on the shaft 20 where it projects beyond the side 2 of the frame.

25 is an idler sprocket supported on the shaft 26 extending through suitable bearings in the sides 2 and 3 of the casing adjacent to the back of the sweeper.

27 is a driving sprocket secured to the clutch member 28 mounted on the stud 10 of one of the wheels 9, the clutch member 28 being operatively connected with the hub of the wheel 9 by the friction rollers 29, as shown in Fig. 4, this form of clutch being well known, and it must be understood that any standard type of clutch may be used to operatively connect the driving sprocket with the driving wheel.

30 is a chain extending around the driving sprocket 27 under the carrier roll sprocket 24, over the brush sprocket 54, and around the idler sprocket 25 back to the driving sprocket.

31 is a handle secured to the casing of the sweeper at the back thereof, whereby it may be pushed along forwardly on the driving wheels 9 and the trailer 11, and as the driving wheels 9 rotate the friction rollers 29 lock the clutch member 28 with the hub of the wheel 9 and rotate the driving sprocket 27. In this manner the endless belt carrier 22 is made to travel around the rollers 18 and 19, the upper surface of said carrier moving in the same direction as the sweeper. The sweeping brush 14 is rotated in the opposite direction to the roller 18, which moves the belt carrier and sweeps the loose dirt with which it comes in contact onto the upper surface of the endless belt.

32 is a dust box supported on the cross piece 55 extending between the sides of the sweeper frame and the front thereof, and the dust and dirt is deposited from the endless carrier into this box, the hinged end 8 of the casing being raised when it is desired to remove the dust box 32 to empty the same.

33 is a dust box supported in the casing 1 immediately in rear of the brush 14, and catching any dust or dirt which may adhere to the brush bristles and be carried over the top of the brush.

The hereinbefore described parts of the sweeper constitute the main operative elements, but in order that the same may perform the work of sweeping effectually under any conditions, the following parts are deemed expedient.

35 is a rotating brush fixedly secured on the shaft 36 journaled in suitable bearings in the sides 2 and 3 of the sweeper immediately beneath the roller 19.

37 is a sprocket fixedly secured to the shaft 36 where it projects beyond the side 2 of the sweeper.

38 is a sprocket fixedly secured to the shaft 21 of the roller 19 where it projects beyond the side 2 of the sweeper.

39 is a chain operatively connecting the sprockets 37 and 38, whereby the brush 35 is rotated as the endless belt 22 moves around the roller 19, the brush 35 contacting with the under side of the carrier 22, and cleaning any dust or dirt therefrom, which may be carried on with the belt, and again dropped to the pavement. The dust or dirt swept from the carrier by the brush 35 is deposited in the dust box 32.

40 are side guard brushes at the ends of the arms 41, said arms being pivoted intermediate of their length to the pins 42 projecting from the inner side of the sides 2 and 3 of the sweeper, and supporting the brushes close to the inside of the sides 2 and 3 immediately in front of the sweeping brush 14.

43 are stop pins projecting from the inside of the sides 2 and 3 of the casing a short distance above the ends of the arms 41 where they project beyond the pins 42, said stop pins 43 preventing the brushes 40 from dropping too far if the sweeper is raised at the back or passes over a dip in the pavement.

44 are side scrapers pivotally supported from the pins 42 in a similar manner to the brushes 40 and between said brushes and the sides 2 and 3. The brushes 40 and scrapers 44, as the sweeper is moved along over the pavement, will hold any dust which may accumulate in front of the brush 14, until it is swept up onto the carrier 22, more particularly when the sweeper is turning a corner.

45 are scrapers formed of flat spring metal, having one end thereof hook-shaped to scrape the surface of the pavement, and the other end thereof encircling the rod 46

extending between the sides 2 and 3 of the scraper toward the front. The scrapers 45 are spaced a short distance one from the other on the rod 46, and are also alternately made short and long, whereby any dirt which may adhere to the pavement over which the sweeper passes will be scraped and loosened and permitted to pass between the scrapers, where it is left in the path of the sweeping brush 14.

47 is a bar, having the crank ends 48 extending through suitable orifices in the sides 2 and 3 of the sweeper immediately beneath the scrapers 45.

49 is a hand lever fixedly secured to the crank end 48 where it projects through the side 3, said lever extending toward the rear of the machine, where it can be conveniently moved by the operator to turn the rod 47, so that it raises the scrapers 45 clear of the pavement, a suitable rack 50 being secured to the side 3 of the scraper to retain the hand lever 49 in any set position.

What we claim as our invention is:

In a street sweeping machine having a box like casing and a pair of supporting wheels at the front thereof, a fork swivelly connected to the rear of said casing and having vertical slots in the fork extremities thereof, a pin extending through said slots, a trailer wheel journaled on said pin and a cam fork pivoted to the aforesaid fork and having stepped notches in which said pin rests.

Signed at the city of Ottawa, in the Province of Ontario, in the Dominion of Canada, this 5th day of August, 1910.

BERNARD JOSEPH NOLAN.
JOSAPHAT PHARAND.

Witnesses:
VICTOR BÉLAUFER,
K. F. MACGIBBON.