

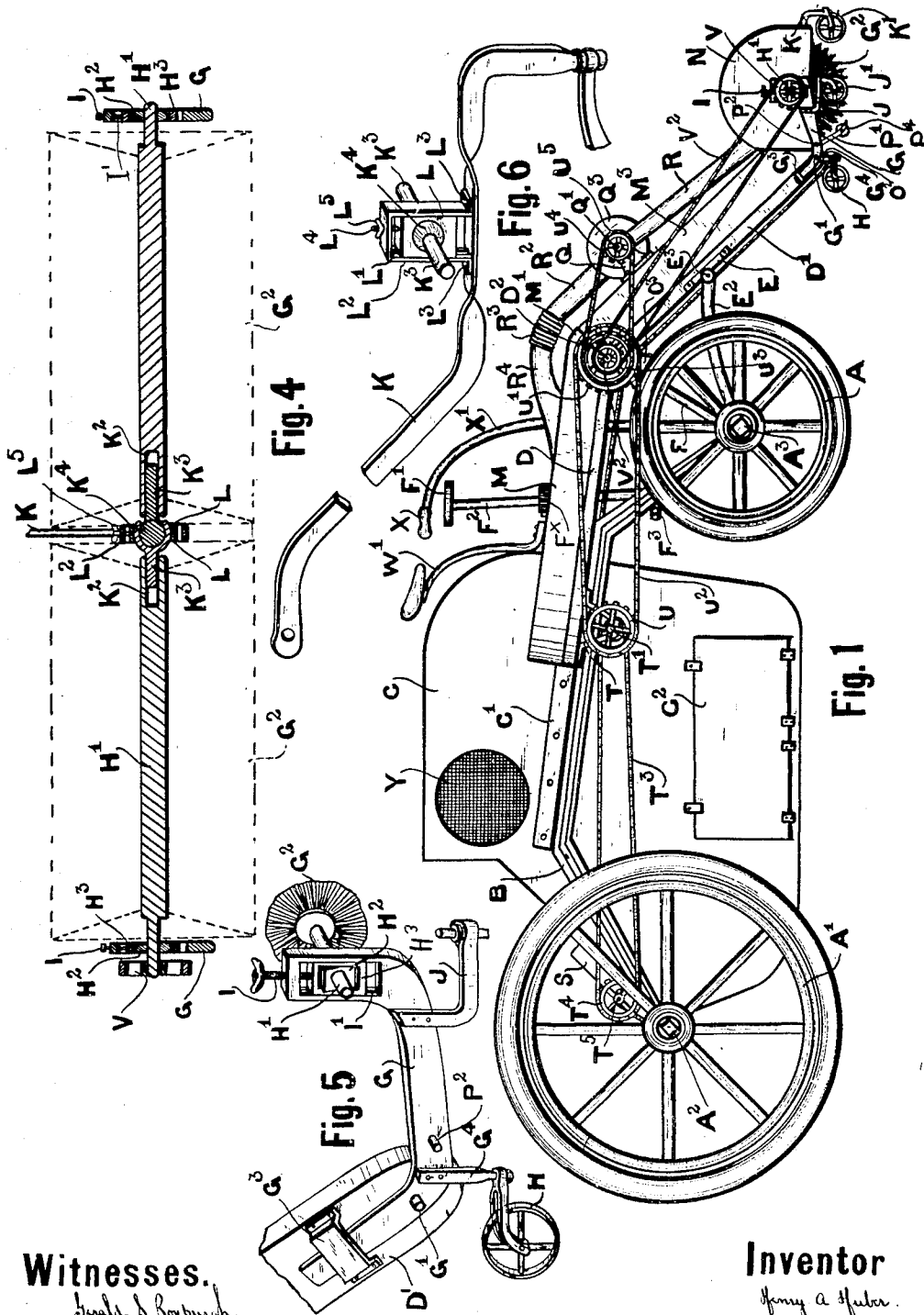
No. 892,260.

PATENTED JUNE 30, 1908.

H. A. HUBER.
COMBINED STREET SWEEPER AND CLEANER.

APPLICATION FILED NOV. 1, 1906.

3 SHEETS—SHEET 1.



Witnesses.

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Inventor

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3 SHEETS—SHEET 2.

Fig. 7 is a perspective view of a book binding mechanism. It shows a central spine-like structure with a series of curved, overlapping bands or flaps. The bands are labeled with 'P' and subscripts: P¹, P², P³, P⁴, and P⁵. A small, curved component labeled 'F' is attached to the side of the binding. A line labeled 'A' points to the central spine area.

Fig. 8 is a perspective view of a mechanical linkage or lever system. It features a central pivot point where several arms meet. One arm is labeled 'A'. Another arm is labeled 'E' with subscripts E¹, E², E³, E⁴, and E⁵. A curved component labeled 'F' is attached to one of the arms. A line labeled 'A' points to the central pivot area.

Witnesses.

Witnesses,
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3 SHEETS—SHEET 3.

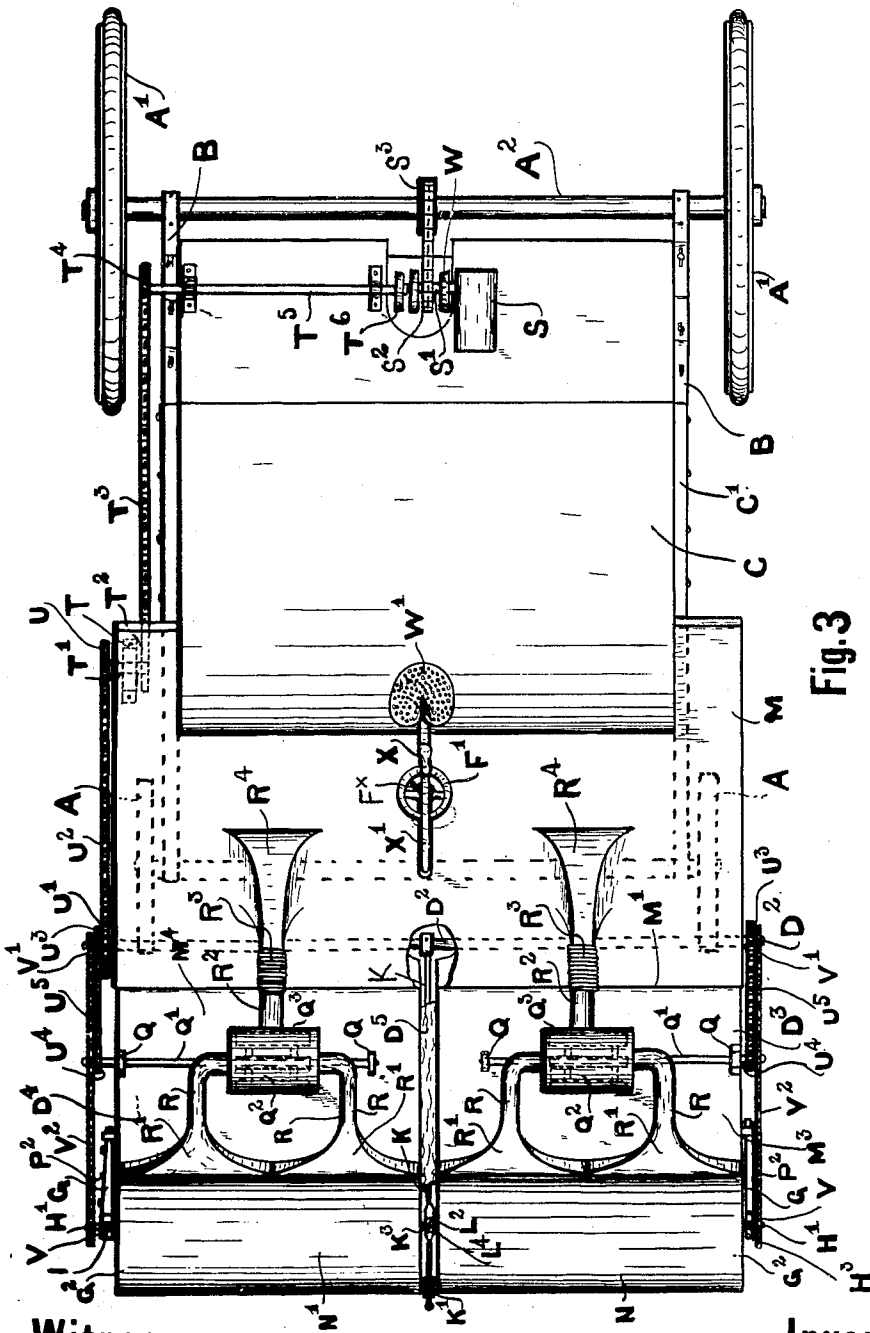


Fig. 3

Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY ALBERT HUBER, OF WINNIPEG, MANITOBA, CANADA.

COMBINED STREET SWEEPER AND CLEANER.

No. 892,260.

Specification of Letters Patent.

Patented June 30, 1908.

Application filed November 1, 1906. Serial No. 341,591.

To all whom it may concern:

Be it known that I, HENRY ALBERT HUBER, of the city of Winnipeg, in the Province of Manitoba, Canada, photographer, have
5 invented certain new and useful Improvements in Combined Street Sweepers and Cleaners, of which the following is a specification.

My invention relates to street sweepers
10 and cleaners, more especially those adapted to be used on pavements and such like, and the objects of the invention are, firstly, to provide a machine which, to a large degree, will do away with street sprinklers, and hand
15 sweepers, secondly, to provide a serviceable, efficient, and self propelling machine, of moderate cost, and thirdly, to provide a machine of great working capacity, under the control of a single operator.

It consists essentially of a set of carriage
20 and traction wheels, a box or inclosed body portion, a frame work or stand forward of the box and above the carriage wheels, an adjustable nose extending forwardly and
25 downwardly from the stand, an endless carrier passing over the nose and the stand, and backwardly into the box, brooms pivotally supported forward of the nose, a hood for the brooms, a casing inclosing the ascending
30 side of the conveyor, exhaust fans, exhausting from the hood to the inside of the casing above the carrier, adjustments to the brooms, adjustments to the nose, means for raising the nose, and a motive power, all arranged
35 and constructed as hereinafter more especially described.

Figure 1 is a side elevation of my complete
invention. Fig. 2 is a sectional elevation of
40 the machine, the section being taken through the center. Fig. 3 is a plan view. Fig. 4 is a detailed, vertical, sectional view, through the center of the brush axles. Fig. 5 is an
enlarged, detailed, perspective view, of a
45 portion of the front of the nose showing the end adjustment of the brushes. Fig. 6 is an enlarged, detailed, perspective view of the central adjustment for the brushes. Fig. 7 is an enlarged, detailed, perspective view of the collector, immediately to the rear of the
50 brushes. Fig. 8 is an enlarged, detailed, perspective view of the nose lifting device.

Referring to the drawings, A are the forward carriage wheels, and A¹ the rear traction wheels.

55 A² is the rear axle and A³ the front.

B are longitudinal springs secured to the

front and rear axles, one on either side. Dependent from the springs is the box C, the bottom of which it is desirable to have clear the ground by four to six inches.

C¹ are supports on either side of the box, secured to its side faces and bearing on the springs.

C² is a gate in the side of the box and is adapted to open outwardly and downwardly,
65 so that it will be of assistance in the cleaning out of the box.

D is a framework or platform, extending forwardly from within the box, and supported from the upper face of the springs,
70 and is in width somewhat greater than the box. Accordingly it extends forwardly, above the wheels.

D¹ is the nose, which is of the same width as the platform and is pivoted at its upper
75 edge to the frame work by a rod or axle D² extending completely across. The nose is divided into two portions D³ D⁴, which are of equal width and separately movable, being joined at their inner edges by means of
80 a waterproof canvas D⁵ or such like, which will allow of slight individual movement. The position of the joint is such that the nose may extend over the front wheels to the ground, at an angle of somewhere about
85 forty-five degrees.

E are metallic runways on the sides of the nose. E¹ is a central sleeve pivotally supported on the front axle A³. E² are side arms extending from the sleeve forwardly,
90 and E³ are rollers pivotally secured to the arms on the inner face. E⁴ are central arms extending from the sleeve E¹ and in a plane with the outer arms, and E⁵ are rollers similar to those E³. F is a rigid loop extending
95 upwardly from the sleeve. The rollers E⁵ are adapted to engage with runways similar to those E on the inner side faces of the respective portions of the nose. F¹ is a hand wheel, and F² a rod extending from the hand
100 wheel downwardly centrally through the platform. F³ is a grooved wheel secured to the end of the rod, and F⁴ is a chain attached to the wheel and extending forwardly to the tip of the loop F. By this attachment the
105 turning of the wheel F¹ winds or loosens the rope on the chain, and accordingly lifts the nose by means of the arms; the rollers and the runways aiding materially to give an easy action. A ratchet and ratchet wheel
110 F^x is employed for retaining the hand wheel in any desired position.

I have considered it advisable to make the nose wide, in order that time may be saved in using the machine, and with this increase of width comes the necessity of allowing for adjustment of the nose to comply with the curvature of the street, and other unavoidable irregularities.

G are bars pivotally supported at G¹ to the outer side faces of the nose and towards the forward end, and form bearings for the brushes or sweepers G².

G³ is a strap extending across the free end of the bar G, and secured to the nose, allowing free upward and downward movement of the bar.

G⁴ is a standard bolted to the plate G, practically in alinement with the nose, and extending downwardly.

H is a swivel wheel pivoted to the end of the standard, and there are four such swivel wheels secured to the nose, one at either side of the respective sections of the nose.

H¹ is the axle of the brushes, the outer end of which is revolubly supported in a pivoted bearing H² dependent from a block casing H³, slidably supported in the forward upturned end of the bar G. In this way any upward or downward motion of the axle is taken by the pivoted bearing H², and an adjustment as to the height of the axle is given by a winged screw I. By turning the screw the casing H³ is moved up or down, being guided and retained by grooves I¹ within the upturned end of the bar G.

J are arms fastened forwardly on the bars G, and J¹ are swivel wheels secured on the arms J. The position of the swivel wheel on the ground is such, that it is practically directly below the axle of the brush, and the swivel wheels being one at either side, take all the end weight due to the brush.

K is a bar extending centrally above and between the portions composing the nose, and is pivoted at its upper end to the shaft D².

K¹ is a swivel wheel secured to the forward end of the bar K.

The bar K supports the central bearing for the brushes, which are situated somewhat behind the swivel wheels, and in alinement with the outer end bearings heretofore mentioned. It will be understood that in the machine, as shown in the drawings, there is a brush to each portion of the nose. The brushes are of the ordinary circular style, having a central shaft running therethrough, which shaft I have denoted by the letter H¹. Accordingly there are two separate shafts, having their ends bearing in the arms G, and centrally sustained by the bar K. The curvatures of the pavement, as before mentioned, require also an adjustment for the brushes, at the center, which will allow the individual shafts H¹ an upward or downward movement at their inner ends. This is ac-

complished in the following manner:—A circular opening K² is cut, extending longitudinally within the inner ends of each of the individual shafts H¹. Extending slidably within the openings are stems K³ being the extending ends of a knuckle and ball joint K⁴. The outer surface of the knuckle is hemispherical, and is retained within a vertically sliding bearing L, working in a groove L¹ within the casing L² secured to the bar K, at L³. A threaded bolt L⁴ extends upwardly from the bearing L, and is embedded at its lower end therein, and L⁵ is a winged nut on the bolt, adapted to suspend the bearing within the casing. In this manner the inner ends of the axles H¹ are directly supported from the swivel wheel K¹, and it is desirable that the wheel stand backwardly towards the bearing, as is allowed by the brushes.

If when in operation the central wheel K¹, or the side wheels J¹ should be running on a different plane, the brush bearing adjustments will allow for such, that is, if the center swivel wheel should pass over anything on a higher plane than that of the side wheels, the bearing L would necessarily go up with the wheel, and consequently the bearings at the outer ends of the axles would be turned, which is allowed for by the pivoted bearing H². The allowance for the lengthening of the shaft is made by the stems K³ working in the openings K². The ball and socket allows for the change of position of the axle, as the ball plays in the socket, and the socket in the bearing L. If the center wheel should be lower than the end wheels, the action is the same. Thus it will be seen that complete consideration is made for any motion of the shaft H¹, in the vertical plane, and consequently the brushes can take the ordinary deviations in curvature, etc., in the pavements. In event of the brushes wearing along the circumference, they can be lowered by adjusting the winged nut L⁵ on the screw L⁴ at the center bearing, and by adjusting the screws I of the end bearings.

The platform D is completely covered by an open ended casing M, which extends considerably above and is necessarily wider than the box. At the rear end where the platform extends into the box, the casing is cut away to lie flush with the edges of the box. Forwardly it is rounded at M¹ along the upper face, the curve being concentric with the shaft D².

Each of the individual portions D³ D⁴ of the nose, have a casing M³ M⁴ extending above them, and fitted at their upper end to sleeve with the casing M. Each brush is covered by a hood N N¹, which opens at its rear face into the individual casings M³ M⁴. The hoods are so constructed that they allow for the upward and downward adjustment of the brushes, and are of the same width as the

casing, the end bearings for the brushes extending on the outside. The openings between the respective nose portions is, as before said, covered with water-proof canvas, and the inner ends of the hoods are similarly joined. It will be noticed that the bar K, before mentioned, passes throughout its length immediately below the water-proof canvas, and in this way is free to move to a limited extent, sufficient for all necessary movement of the brushes. At the inner end of the platform are sets of chain wheels O, and on the shaft D² and within the casing are similar sets of chain wheels O¹ in alinement with those O.

O² are forward sets of chain wheels pivoted towards the outer edges of the portions of the nose.

The wheels O¹ are secured to the shaft D², and revolve therewith.

O³ are sets of chain wheels pivoted from the platform by means of a bracket O⁴ which extends below, there being two sets of such wheels.

P are endless sprocket chains, being four in number, passing over the corresponding wheels in the sets, that is, over the central wheels O¹, around the lower wheels O², over the wheels O³, and around the rear wheels O. Extending between the chains are belts, which serve to elevate from the lower end upwardly to the box; consequently there will be two endless belts, each having its upper or ascending side clearing the upper face of the platform, and its nose portion, and within the casing, directly to the rear of the brushes, and forward of the belt are two collectors P¹, which serve to take what is swept by the brushes and deposit it on the conveyers or belts.

The construction of the collector is as follows:—An axle or rod P² bears in the side bar at the outer end, and at its inner in an arm extending from the inner edge of the nose portion. A curved plate P³ of an ogee-shape is centrally pivoted on the rod, and has along its forward edge a series of pivoted wheels P⁴, designed to allow the plate to clear the ground. The upper end of the plate passes over the conveyer and accordingly the sweepings from the broom are easily deposited on the belt. The wheels P⁴ should be large enough to prevent any chance of buckling the plate P³ in event of a break in the pavement or such like similar irregularity. By this arrangement it is always assured that all the sweepings from the broom will be caught by the collector, as it remains practically at a constant distance from the ground, and is not thrown decidedly away from the pavement should there be a sudden elevation.

Q are bearings supported from the face of the casing, on the nose, and Q¹ are shafts rotatable within the bearings.

Q² are fans secured to the shafts, and Q³ are cylindrical casings enveloping the fans.

R are draft pipes, opening at their upper ends into the ends of the cylindrical casing, and flared as at R¹ at their lower end, and open to the inside of the hood.

R² are pipes opening from the periphery of the cylindrical casing and extending rearwardly over the nose.

R³ are flexible joints extending between the exhaust pipes R², and the pipes R⁴ opening into the casing above the platform. The joints R³ are formed to allow of the movement of the nose, and will collapse if necessary, and their position is radially from the axle D² above the curved portion M¹.

R⁵ is a flap extending completely across the casing M, and is so proportioned as to prevent any current of air passing from the pipes to the casings on the nose.

Rearwardly supported on the box is a motive power S, from which the main shaft S¹ extends.

S² is a loose gear wheel on the shaft S¹, connected by a sprocket chain to a gear wheel S³ on the rear axle A².

T is a shaft hanger secured to the under face of the platform D, and T¹ is a shaft bearing in the hanger.

T² is a sprocket wheel at the inner edge of the shaft, below the platform, and is connected by a sprocket chain T³ to a sprocket wheel T⁴, at the outer end of the shaft T⁵, which, by means of a clutch T⁶, can be thrown into rotation with the shaft S¹.

U is a sprocket wheel at the outer end and rigid with the shaft T¹ and U¹ is a sprocket wheel secured to the shaft D², and connected with the sprocket U by a sprocket chain U².

U³ is a sprocket wheel on the shaft D² immediately to the side of the wheel U¹, and U⁴ is a sprocket wheel secured to the outer end of the shaft Q¹, and is connected to the sprocket U³ by means of a sprocket chain U⁵.

V is a sprocket wheel secured to the outer end of the shaft H¹ and V¹ is a similar wheel secured to the shaft D², which is at its outer end, and the wheels are connected by a sprocket chain V².

It will be noticed that there is only a single drive for the shaft D², but the gear wheels U³ and V¹ are duplicated on both sides of the nose, there being individual drives for the fans and the wheels.

A clutch W is supplied for throwing the sprocket wheel S² into rotation with the shaft, and any form of clutch may be used which is under the control of the operator. In this way I am able to have the belts running and the machine standing still, or the machine running and the belts stopped, or both running together.

W¹ is a spring seat secured forwardly above the platform.

X is a steering handle, the rod X^1 of which passes down centrally through the casing, between the belts, and bears on the front axle. The ordinary gear, as employed, in automobiles, passes from the rod to the wheels.

The operation of the machine is as follows:—The belts are rotated by the shaft D^2 , and the brush in its movement sweeps the heavier refuse up over the collector, from which it is deposited by the belts into the box. Dust, etc., is drawn upwardly by fans, through the pipes R, and deposited rearwardly through the pipe R^4 within the casing and upon the belts, eventually being deposited, also, in the box. In event of a large obstruction in the pavement, the nose is lifted by means of the hand wheel F^1 , such being done also when the machine has finished sweeping. When the box has been filled, it is cleaned out through the gate C^2 .

Y are openings in the sides near the top of the box, fitted with screens and serve for ventilating.

What I claim as my invention is:

1. In a device of the class described, a wheeled frame, a dust tank or receptacle supported by the frame, a rotatable brush, a hood to the brush, an open-ended stationary casing supported from the platform, and opening rearwardly into the receptacle, an adjustable casing extending from the hood upwardly and sleeving with the aforesaid casing, an endless conveyer operating within the casings, an exhaust fan carried by the adjustable casing and exhausting from the hood, and depositing on the conveyer within the stationary casing, as and for the purpose specified.

2. In a device of the class described, the combination with a rotatable rear axle and a stationary front axle, mounted on rear traction and forward carriage wheels, a set of longitudinal springs supported from the shafts, a dust tank or receptacle between the springs and dependent therefrom, a platform extending forwardly over the front wheels, a nose pivotally secured to the forward edge of the platform, a rotatable adjustable brush pivotally supported from the end of the nose, a hood to the brush, a continuous casing extending above the platform and the nose, and between the hood and the receptacle, the said casing being formed from an upper and lower portion sleeving together, an endless conveyer within the casing, swivel wheels supporting the nose, swivel wheels supporting the brush, means for raising the nose, and means for operating the conveyer and the brush, as and for the purpose specified.

3. In a device of the class described, the

combination with a set of forward carriage and rear traction wheels, of a dust tank or receptacle, a rotatable brush, a continuous sleeved casing between the hood of the brush and the receptacle, said casing consisting of a stationary part and a movable part and a conveyer within the casing, of an exhaust fan supported on the movable part of the casing, a series of pipes leading from the hood to the fan, a pipe leading from the fan, and opening into the upper end of the casing, said last named pipe having a flexible part and means for operating the fan and the brush, as and for the purpose specified.

4. In a device of the class described, the combination with a wheeled frame, of a dust tank or receptacle, a platform extending forwardly from the receptacle and above the front wheels, an open-ended stationary casing secured on the upper face of the platform and opening at its rear end into the tank, a nose pivotally connected to the platform and extending obliquely downwardly, the said nose consisting of a plurality of similar adjoining members, sets of swivel wheels secured to the sides of the nose portions, supporting the same, a set of rotatable brushes, pivoted arms extending forwardly from the outer edges of the adjoining nose portions, a pivotal bearing within the arms, for the outer end of the brush shafts, and within a vertical adjustment to the pivotal bearing, a set of swivel wheels secured to the arms, individual hoods for the brushes, casings secured on the upper face of the individual nose portions, and opening at their lower ends into the hoods, and at their upper ends sleeving with the stationary casing, a flexible joint formed between the upper and lower edges of the adjoining nose portions and the hoods, a shaft pivotally supported at the junction of the nose portions and the platform, and extending forwardly between the nose portions and the brushes, a swivel wheel at the forward end of the shaft, a slidable adjustable knuckle and ball joint dependent from the shaft, the said joint forming the inner suspension for the ends of the brush shaft, endless conveyers within the casings, adapted to deposit sweepings from the brush into the receptacle, a collector behind the brushes, and above the conveyers, fans exhausting from the hoods to the conveyers within the casing above the platform, and a flap extending across within the stationary casing, as and for the purpose specified.

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Witnesses:

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