

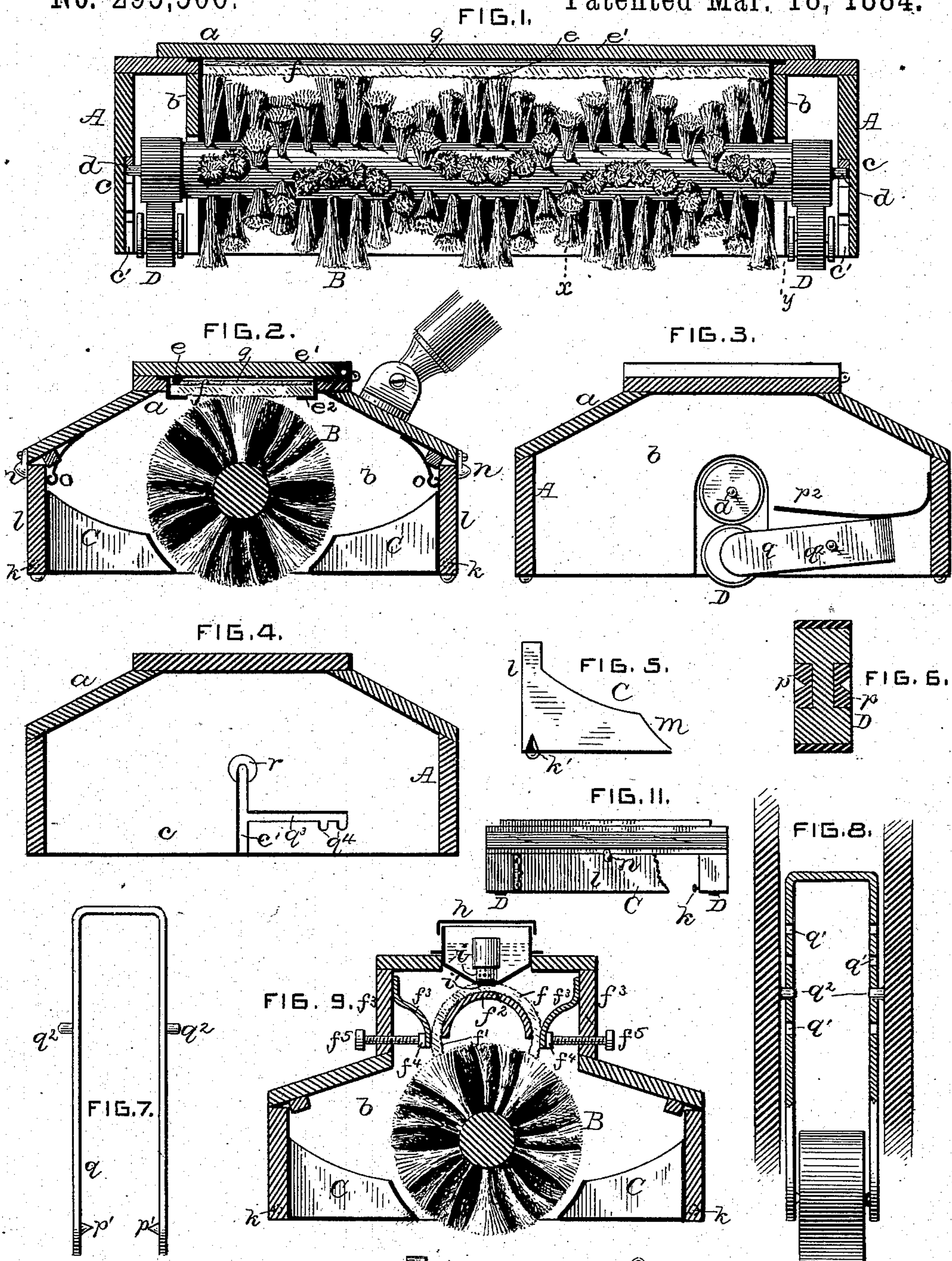
(Model.)

G. M. ROCKWELL.

CARPET SWEEPER.

No. 295,506.

Patented Mar. 18, 1884.



ATTEST:
Philip F. Larner
Howell T. Bartle

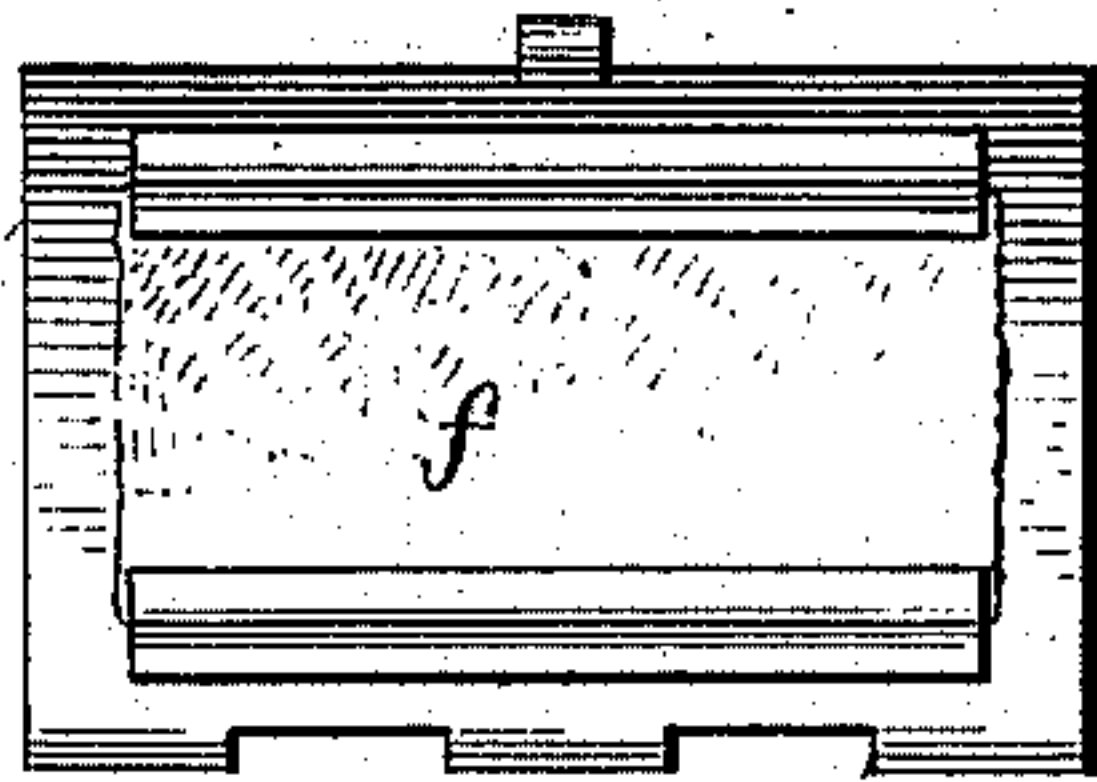


FIG. 10.

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CARPET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 295,506, dated March 18, 1884.

Application filed January 17, 1883. (Model.)

To all whom it may concern:

Be it known that I, GEORGE M. ROCKWELL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Carpet-Sweepers; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of the several features of my invention.

The main object of my present improvements is to provide in carpet-sweepers a capacity for performing a service in sweeping carpets similar but superior to that accomplished by means of a hand-broom when used in connection with wet tea-leaves or othersimilar suitably-dampened substances for aiding in the removal from the surface of a carpet such dry, fine, and adhesive particles of dust or filth as ordinarily resist the action of a broom or a carpet-sweeper. So far as my knowledge extends I am the first to thus improve carpet-sweepers; and I accomplish this end by combining with the brush a dampener, with which the tips of the bristles are successively thrown into contact. By the use of a sweeper embodying this feature of my invention upon a breadth of a carpet which has been previously carefully swept all over by any prior carpet-sweeper known to me, said breadth can be readily distinguished from the others, because of its greater cleanliness, and because of its restoration as nearly to its original appearance as the character of the carpet and its condition as to wear will warrant in each case. This portion of my invention is applicable to any carpet-sweeper in which vibrating or the revolving brushes are employed; but I have chosen to illustrate the same in connection with that class of machines in which the ends of the axle of a revolving cylindrical brush are wholly supported upon and driven by wheels or pulleys which frictionally engage with a carpet as the sweeper is drawn to and fro thereon, and are thereby enabled to impart rotary motion to the brush. This particular variety of machines is illustrated in Letters Patent No. 250,922, issued to Benson W. Johnson, December 13, 1881; and certain features of my present invention relate to the particular construction of such friction-wheels, and to the frames in which they are mounted, with a view to their durability, economy in construction,

greater capacity for adjustment, and noiseless operation.

Another portion of my invention is also applicable to any variety of carpet-sweeper having revolving brushes; and it relates to the particular construction and arrangement of removable dust-pans, with a view to economy in construction and ease of manipulation for discharging the contents of the pans without lifting the entire sweeper for that purpose.

Referring to the drawings, Figure 1 is a longitudinal vertical central section of a carpet-sweeper embodying the several features of my invention. Fig. 2 is a vertical transverse section of the same on line *x*, Fig. 1. Fig. 3 is a vertical cross-section of the same on line *y*, Fig. 1. Fig. 4 is an inside end view of the casing. Fig. 5 is an end view of one of the dust-pans detached. Fig. 6 is a diametrical section of one of the friction-wheels enlarged. Fig. 7 is a top view of a friction-wheel frame detached. Fig. 8 is a longitudinal section of another form of friction-wheel frame. Fig. 9 is a central vertical cross-section of a sweeper embodying the main feature of my invention, and having its dampener provided with a fountain for supplying water thereto. Fig. 10 includes a bottom and a sectional view of an ordinary sheet-metal cover provided with parallel flanges on its under side for the longitudinal reception of a dampener in accordance with my invention. Fig. 11 is a front or side view of the sweeper on a reduced scale, and having one end of one dust-pan broken away.

The casing A of the machine may be largely varied in its form and dimensions, and may be composed partially of wood or wholly of metal. The upper or top portion, *a*, of the casing is so far varied from the usual construction as to properly accommodate the particular form of dampening apparatus desired in each instance. The casings are also provided, as heretofore, with one or two transverse partitions, *b*, according to whether the revolving brush B is driven at one or both ends of its axle. As now illustrated by me, two of such partitions are shown, and each has the usual vertical open slot extending from its lower edge for the reception of the brush-axle, and the inner face of each end *c* of the casing is vertically grooved, as at *c'*, for the reception of the usual axial guiding-pintles *d* of the brush-cylinder.

The construction and arrangement of the

dampening apparatus may be largely varied; but I have deemed it necessary for the purposes of this specification to illustrate but two forms thereof.

5 My dampening apparatus, in the simplest form thereof thus far devised by me is shown in Figs. 1 and 2, and it involves a dampener-chamber, *e*, in the upper portion of the casing, directly over the brush-cylinder, opening
10 downward, and preferably provided at its top with a removable or hinged cover, *e'*, and also provided at or near the bottom thereof with an inwardly-projecting ledge or flange, *e''*. Upon this ledge a piece of any soft fibrous or porous
15 fabric which is a good absorbent of water is placed so that its lower surface will be swept or traversed by the bristles of the brush-cylinder. I find that a piece of soft woolen felt, *f*,
20 being so shaped and dimensioned that it snugly fits at its edges the sides and ends of the chamber *e*, and it is firmly supported by the ledge *e''*. In order that the flexible dampener thus presented to the action of the bristles can be
25 firmly held, I employ a detachable plate, *g*, of wood or metal, which may be flat, as shown, or laterally arched or curved, and overlies the felt; and this plate also serves another function in wholly separating the felt from the bristles
30 when the dampener is not required, the positions of the felt and plate being then reversed; or the felt may be wholly removed. This form of dampener requires the occasional application of water to the felt while in position, or
35 the felt can be removed, placed in water, then lightly squeezed, and replaced for service. In operation the tips of the bristles of the cylinder during a portion of its revolution sweep or traverse the under surface of the felt in both
40 directions as the sweeper is moved to and fro, and the moisture is delivered to said brush in such limited but proper quantities as to enable it to operate without unduly raising dust, and to engage with and remove such extraneous
45 matters from a carpet as can seldom if ever be successfully removed by dry sweeping. When specially good results in sweeping and cleansing are desired—as on fine and expensive carpets—I employ as a moistening-fluid water
50 slightly charged with ammonia, which brightens up the colors and enables grease-spots and other similar defacements to be at least partially, and in most cases wholly, removed. Other chemical agents in solution may also be
55 employed to advantage—as, for instance, borax, naphtha, or benzine—and this main feature of my invention I deem of special value, because of this radical cleansing capacity, which I believe I have for the first time developed in a carpet-sweeper.

60 In Fig. 9 I illustrate a form of dampener which has been specially devised with reference to use on sweepers designed for service in large parlors and on pile carpets, or such
65 as have a specially long nap. In this case I arrange the absorbent fabric *f* in the form of an arch with depending edges *f'*, so that, in-

stead of presenting its central, flat, or slightly-curved surface to contact with the brushes, as before described, it presents its two pendent
70 edges, and the brush, therefore, wipes either side of each of the pendent edges or flaps, according to the direction in which the sweeper is driven or moved. The absorbent fabric or dampener in this case is supported upon an
75 arched plate, *f''*, secured at its ends to the inner partitions, *b*, and the side walls, *f'''*, of the dampener-chamber are composed of flexible material—as, for instance, thin sheet metal—and they may or not be accompanied by a
80 bar, *f''''*, and a screw, *f'''''*, for causing the felt to be more or less tightly compressed near said edges, thereby enabling the depending edges of felt to be raised; or, if the central portion of the felt is not already in contact with the
85 upper surface of the arched plate *f''*, said edges may be lowered, if desired. This dampener is supplied with moisture by the fountain or reservoir *h*, which is centrally located in the top of the casing, and is provided with a tube, *i*,
90 after the manner of a lamp-wick tube, except that I prefer it should be perforated at its sides, as shown. In this tube a length of wick, *i'*, is placed, preferably doubled upon itself, and with its two ends drawn downwardly, and
95 extended in each direction toward the ends of the felt, and in close contact with the central upper portion thereof, so that as the moisture passes through the wick it will be well distributed throughout the dampener. As a
100 means for controlling the delivery of fluid to said wick, or practically cutting it off therefrom, if desired, I apply a suitable close-fitting tube or cap of rubber, leather, or metal to the wick-tube, which, by being raised or
105 lowered, will correspondingly increase or lessen the delivery of fluid to the moistener. The reservoir may be provided with a tight cap or cover for enabling it to better retain such volatile matters as may be employed with the fluid
110 for moistening and cleansing. As a rule it is preferable that dampening fabric be removed from the sweeper when not in use, in order that it may be dried and kept free from mustiness, although if the dampener-chamber be
115 left open it will generally answer the purpose indicated.

Referring now to another feature of my invention, it is to be understood that I am aware that it is not broadly new to provide carpet-sweepers with detachable dust-pans, for enabling the sweepings to be emptied into a coal-hod or a stove-hole without lifting and handling the entire sweeper—as, for instance, they
120 have been mounted upon slide-bearings—after the manner of drawers; but I have devised an improvement in mounting the dust-pans *C* in the casing, by which they are very conveniently removed and replaced, with a positive
125 certainty of having the inner edge thereof always occupy a proper position with reference to the periphery of the cylindrical brush, in order that said brush may properly deliver the sweepings into the pans. In this connec-

tion I employ with each pan a pair of pins or studs and a pair of angular recesses, like the letter V inverted. The studs k are located in the side of the partition, near the front side of the casing, and near the bottom thereof, as shown, so as to project toward each other, and the angular recesses k' are located at the lower front portion of the ends of the pan, as shown; but it will be readily obvious that the studs may be located on the pan and the recesses made in the partitions b with fair results; but in this latter case each recess would require an open lateral entrance for the admission and withdrawal of the studs attached to the pan. I prefer to locate the recesses on the pans and to employ for the studs headed nails firmly driven into the casing. Each pan has a wooden front, l , and to this the usual sheet-metal portion is secured. Each end of the wooden portion of the pan is cut away or recessed at its lower edges. The sheet metal at each end of the pan is extended and bent so as to lap over upon the outer surface of the wooden front. In the lower edge of said metal at each end of the pan an angular slot is provided, which opens into the adjacent recess in the wooden front, so that when the pan is placed in position each of said angular recesses is occupied by a stud, and said studs wholly support the pan, and because of the angularity or V shape of the recesses the necks of the studs are snugly embraced on each side, which not only prevents the pan from rattling on said studs, but also causes the pan to always occupy the desired position in the casing for properly presenting its inner upper edge, m , to the periphery of the brush cylinder. A locking-button, n , on the outside of the casing, near its upper edge, engages centrally with the upper front surface of the pan and secures it in position; but to prevent the pan from rattling in the casing when the sweeper is in use, I cushion the pan on its inner front side, so that it will be tightly confined between its cushion and the button or other locking device, and also so that when the button is unlocked the upper front edge of the pan will be thrown outwardly and enable said pan to be conveniently handled for removal. The cushion in its best form is a metal spring, O , secured at one end to the under surface of the top of the casing, and arranged to bear with its outer or free end against the inner surface of the front of the pan. While, for the reasons stated, I prefer the angular slots or recesses, as shown, I am aware that desirable results will be obtained if straight slots or recesses be used in lieu thereof; and so far as my knowledge extends I am the first to employ a slot-and-pin connection for mounting detachable dust-pans in carpet-sweeper casings.

The remaining portions of my invention relate to the friction-wheels D and to the frames in which they are mounted. It is well known that the friction or driving wheels of carpet-sweepers are as a rule greatly liable to wear

loose if mounted freely upon an axle, and that the bearings of axles on which the wheels are tightly mounted are equally liable to be worn; and that in both cases after a little wear said wheels render the operation of sweeping objectionably noisy. I have sought to render the wheels and their axes more durable and noiseless, and I accomplish this end, mainly, by providing each wheel (usually composed of wood) with rawhide centers p , having conical center bearings therein, as seen in Fig. 6. Instead of having a pin or axle extending through the wheel, as heretofore, I employ oppositely-located conical studs, p' —one for each side of the wheel, as shown. These studs p' project inwardly from the opposite sides of a rectangular frame, q , which is made of hard sheet metal, and is sufficiently springy to enable its outer ends to be spread apart for the admission and removal of the wheel, and the conical studs are always pressed inwardly into close relations with the rawhide center bearings.

I am of course aware that rawhide has heretofore been used in boxes for car-axles and in other similar service; and I therefore limit my claims to that material when in the form of center bearings, and in combination with a friction-wheel and a brush in a carpet-sweeper, whereby the desirable noiseless operation of those parts is secured. I am also aware that metal center bearings and pivots have heretofore been employed in various connections—as, for instance, in mounting the idle wheels of belt-fasteners in sewing-machines; but I know of no prior use of such bearings in connection with the friction driving-wheels of a carpet-sweeper, whereby said wheels may be readily removed and replaced for applying and adjusting the usual rubber bands, and also whereby the center pulleys may be advanced from time to time to compensate for wear and enable the friction-wheel to properly engage with the axle of the brush driven thereby.

Each frame q is pivoted to the casing and to the adjacent partition b , so that it may be longitudinally tilted, and a light spring, p^2 is provided, which bears downwardly upon the rear end of the frame, as described in the prior Letters Patent hereinbefore referred to. As a novel feature I have now made this tilting-frame longitudinally adjustable with reference to the bearings of its pivots, whereby the friction-wheel may either be placed with its axis directly beneath the axis of the brush-cylinder, or more or less at the one side thereof, for enabling the brush to be operated in different planes, so that when heavier contact of the brush with the carpet is desired, or when the brush is reduced in size by the wear of the bristles, it may be operated in a sufficiently lower plane to place its periphery into proper working position with relation to the surface of the carpet. I have shown two different contrivances for varying the position of the friction-wheel. In Fig. 7 the frame q is provided on each side with several lateral per-

forations q' for the reception of the pivot-studs or pins q^2 , one of which is preferably removable endwise through the end of the casing, so that said frame may be adjusted in either direction after the removal of a stud; or the said studs may be quite short and fixed, because the frame, being laterally flexible or springy, can readily be moved for readjustment by pinching the outer ends of the frame together. In Figs. 3 and 4 the frame has fixed pivots q^2 , and the end of the casing at its inner side and the coincident side of the partition b have each a transverse groove or recess, q^3 , and several bearing-recesses, q^4 , communicating therewith, as seen in Fig. 4, so that the fixed pivots of the frame can be passed into said transverse slots q^3 , and located in such of the recessed bearings q^4 as may from time to time be deemed desirable. In lieu of the recesses shown, oppositely-located holes may be employed as bearings for the frame-pivots, because the lateral flexibility of the frame enables its outer end to be compressed when the wheel is removed therefrom, and thereby admit of the longitudinal entrance of each of the pivots to its bearing, or of their ready removal therefrom.

It will be seen that when the sweeper is lifted, the brush-cylinder is prevented from falling downward by the friction-wheels because of the springs at the rear of their frames; but that said springs nevertheless permit the frames to be so tilted as to enable the brush to be readily removed from the casing, as heretofore; and it will also be seen that because of the flexibility of the outer ends of each frame and their conical studs the wheels themselves can be readily removed for reclothing them with the usual rubber tread-rings; and that by removing said wheels from their frames the latter can be readily adjusted at their pivotal bearings or wholly removed from the casing.

The rawhide bearings r for the brush-pintles, as shown in Fig. 4, largely contribute to noiseless operation, and they are not only very durable but they enable the brush to be smoothly and easily rotated. The arrangement of the dampener f in Fig. 10 is well adapted for use with such hinged sheet-metal covers as are frequently used on carpet-sweepers, the two parallel flanges shown being soldered to the underside of the cover and the dampener fabric inserted longitudinally, as shown. Water may be applied through small holes in the cover or directly to the dampener, either when it is in position or when removed for that purpose.

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

1. The combination, substantially as hereinbefore described, of carpet-sweeping mechanism and a dampener for moistening the sweeping-brush.

2. The combination, substantially as hereinbefore described, of carpet-sweeping mechanism,

a dampener for moistening the sweeping-brush, and a reservoir for water or other fluid, communicating with and supplying the dampener with moisture.

3. The combination, substantially as hereinbefore described, of a suitable casing, a revolving sweeping-brush, and a suitable absorbent fabric located within the casing, and in contact with the periphery of the brush for serving, when moistened, as a dampener, as set forth.

4. The combination, substantially as hereinbefore described, of the revolving brush, the casing having a chamber for a dampener, and a removable plate for closing said chamber adjacent to said brush, as set forth.

5. The combination, with the casing of a carpet-sweeper, of a detachable dust-pan, and a pin-and-slot connection for mounting said pan in the casing, substantially as described, whereby the dust-pan can be readily removed from the sweeper-casing for dumping and as readily replaced, and also whereby the pan is firmly maintained in proper position with relation to the sweeper-brush, as set forth.

6. The combination, with the casing, of a laterally-detachable dust-pan provided with angular recesses, the studs for occupying said recesses and supporting the pan, and the cushion and button for tightly locking the pan in position, substantially as described.

7. The combination, with the casing and the revolving brush, of a friction-wheel beneath the axle of the brush for driving and supporting the same, and a longitudinally-adjustable friction-wheel frame pivoted to the casing, substantially as described, and means whereby said friction-wheel may be adjusted with relation to the axis of the brush and enable the latter to be operated in varied horizontal planes, as set forth.

8. The combination, with a carpet-sweeper casing and a friction-wheel, of a laterally-flexible tilting frame provided with pivots on which it tilts, and also with bearing-pivots for said wheel, substantially as described, whereby on expanding the outer end of said frame the friction-wheel may be removed, and on then contracting said outer end said frame may be detached from the casing, as set forth.

9. The combination, in a carpet-sweeper, of the revolving brush, a friction driving-wheel provided with oppositely-located conical center bearings, and a laterally-flexible driving-wheel frame, substantially as described.

10. The combination, with a carpet-sweeper brush, of a friction driving-wheel provided with rawhide center bearings, and a laterally-flexible frame for said wheel, provided with oppositely-located conical centers or pivots, which occupy the rawhide bearings, substantially as described.

GEORGE M. ROCKWELL.

Witnesses:

ERWIN J. FRANCE,
EDWIN ALDRICH.