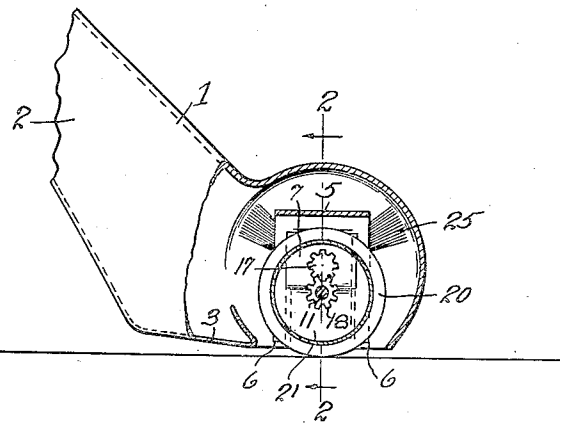
J. B. KIRBY.

BRUSHING MECHANISM FOR SWEEPERS.

APPLICATION FILED MAR. 24, 1920.

1,395,500. Patented Nov. 1, 1921.

Fig. 1



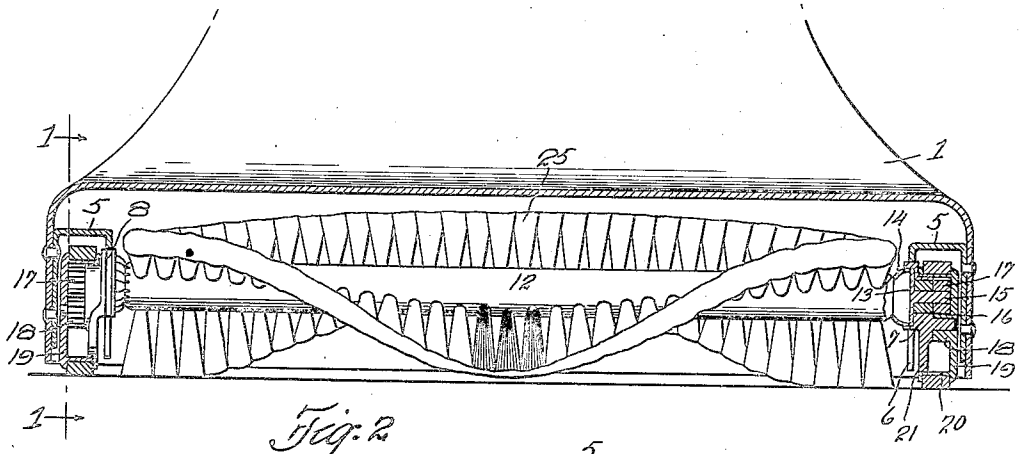


Fig. 2

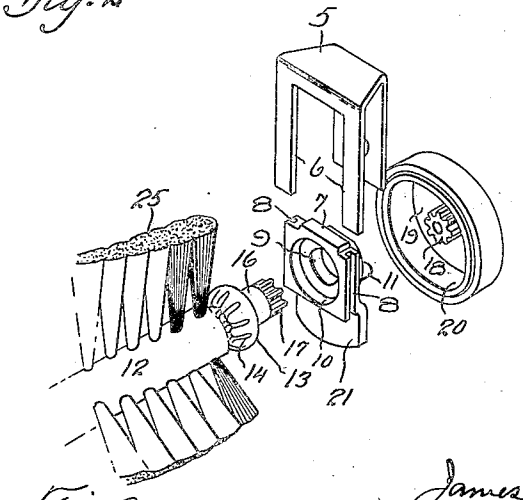


Fig. 3

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BRUSHING MECHANISM FOR SWEEPERS.

1,395,500, Specification of Letters Patent. Patented Nov. 1, 1921.

Application filed March 24, 1920. Serial No. 368,250.

To all whom it may concern:

Be it known that I, JAMES B. KIRBY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Brushing Mechanism for Sweepers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to carpet sweepers and especially to that type of carpet sweeper in which the picking up of the dust or litter is assisted by a current of air but is not limited to that relation. The objects of the invention are the provision of a new and improved means for supporting and driving the brush, which shall be extremely simple, compact and reliable, free from derangement or clogging by lint, and easily taken out or replaced; the provision of compact and self-contained devices whereby the brush is supported and driven in a direction opposite to that of the movement of the sweeper; while further objects and advantages of the invention will become apparent as this description proceeds.

In the drawings accompanying and forming a part of this specification I have shown one embodiment of my said invention although it will be understood that this drawing is intended to be illustrative of only one of the great number of physical forms in which the principle of my invention may be utilized. In these drawings Figure 1 is a sectional view corresponding to the line 1—1 of Fig. 2; Fig. 2 is a sectional view corresponding to the line 2—2 of Fig. 1; and Fig. 3 is a perspective view showing in separated relation the different moving parts by which the brush is supported and operated.

Describing the parts by reference characters 1 indicates the casing of the machine which may be of any suitable or desired material, size, shape or mode of operation. In the present illustration I have shown a suction passage 2 and also a dust pan 3, but either one of these features could be omitted or modified without affecting the present invention. Secured at each end of this casing is a U-shaped bracket 5, one of its arms being formed with a longitudinal slot defining parallel slideways 6—6. 7 denotes a bearing block which is formed at each side with a longitudinal slot 8 adapted to receive one of these ways, said block also having an aperture 9, surrounded at one side with a counter-bore 10 and having adjacent thereto on the opposite side a bearing stud 11.

The brush shaft is shown at 12 and is usually made of wood, although any suitable material will serve. In the present embodiment I have shown it as provided at each end with a cap 13 suitably secured thereto as by the crimping 14. This cap is provided with an axial extension 15 having a bearing washer or bushing 16 loosely journaled thereon and a spur-pinion 17 rigidly affixed beyond the washer. This washer or bushing is preferably made of some kind of hard wood against which steel will run with a minimum of friction and without being affected by dust or grit. The washer 16 fits in the aperture 9 and the head 13 enters the counter bore 10, while the pinion 17 passes entirely through the plate and meshes with a pinion 18 journaled on the stud 11 and rigidly attached to the supporting wheel 19. This wheel is located between the two arms of the bracket 5, and is preferably formed with its rim 20 surrounding and housing the gears 17 and 18 and projecting close to the face of the bearing block 7. I have also shown this block as formed with a depending skirt 21 fitting snugly inside the rim of the wheel and closing the same against the entrance of lint or litter.

The bristles of the brush are shown at 25 and are preferably arranged in helical tufts so that the resistance to rotation of the brush will be uniform. The length of these bristles is such as to cause them to bear with the proper force upon the surface which supports the wheels, while the gear arrangement herein shown causes a rotation of the brush in a direction opposite to that in which the wheel turns which largely increases the sweeping effect. If it is necessary to clean or replace the brush the same can be removed merely by pulling it from its place. The normal diameter of the brush is less than the width of the brush chamber but less than that of the inlet mouth, thus preventing the accidental loss of the brush when the cleaner is held in elevated position, although the flexibility of the bristles permits removal of the brush when necessary for cleaning or the like. The engagement of the brush with the floor is sufficient to hold the same in proper position

during operation. It will also be noted that the rearrangement of the parts is such as to hold the various members in proper relative relation during the time that the brush is located inside its chamber, and yet immediately upon its withdrawal of the parts can be instantly separated without the removal of any screws or of undoing any other fastenings.

By the words "brush" and "bristles" I do not mean to restrict myself to the employment of brushing means provided with hairs or fibers, but equally include such alternative constructions as are at present well known in the arts, for example, rubber strips, leather lashes, metal paddles or similar substitutes; and in general I do not restrict myself to the constructions herein illustrated except as the same are recited in my claims, and I afford to those claims the broadest meaning that their language will support.

Having thus described my invention, what I claim is:

1. In a carpet sweeper, a casing, brackets carried at opposed points thereof and defining pockets, blocks carried by said brackets, a brush shaft journaled in said blocks, a carrying wheel located in each pocket and journaled to the corresponding block, and driving connections between each wheel and said shaft.

2. In a carpet sweeper, a casing, a bracket secured therein and having a slideway, a bearing block slidably mounted therein, said block having an aperture and a stud, a brush shaft journaled in said aperture, a carrying wheel journaled on said stud, and meshing gears connected to said shaft and wheel respectively.

3. In a carpet sweeping device, a casing, a bearing block carried thereby and having an aperture, a brush shaft having a reduced extension traversing said aperture, a bearing bushing loosely journaled on said extension and engaging the wall of said aperture, a pinion secured to said extension beyond the bushing, a carrying wheel journaled to said block upon an axis at one side of and parallel to said extension, and a gear carried by said wheel and meshing with said pinion.

4. In a device of the character described, a casing, a bearing block carried thereby and having an aperture, a carrying wheel journaled to said block upon an axis parallel to said aperture and at one side thereof, said wheel having a laterally projecting cylindrical rim and said block having a portion fitting closely into the interior of said rim, a shaft journaled in said aperture, and intermeshing gears carried by said shaft and wheel respectively inside the limits of said rim.

5. In a device of the character described, a U-shaped bracket one of whose arms is slotted to produce a slideway, a bearing block having grooves fitting said slideway, a brush shaft and a carrying wheel journaled to said block upon parallel axes, said wheel being located between the arms of said bracket, and intermeshing gears carried by said shaft and wheel respectively.

6. In a device of the character described, a bearing block having a pair of spaced parallel grooves and an aperture between the same, and a bearing stud projecting from one side of said block adjacent to said aperture.

7. In a device of the character described, in combination, a casing having a brush chamber formed at the side presented toward the working surface with a narrow elongated mouth of less width than the chamber, a brush in said chamber and having a diameter intermediate the width of the mouth and that of the chamber, guiding means in said casing permitting free movement of said brush toward and away from said mouth, and carrying wheels supported by said guiding means and geared to the brush.

8. In a device of the character described, in combination, a casing having a brush chamber formed at the side presented toward the working surface with a narrow elongated mouth of less width than the chamber, slideways carried by said casing perpendicular to the plane of said mouth, bearing blocks freely movable in said slideways, a brush journaled in said blocks, said brush having flexible sweeping provisions whose normal diameter is greater than the width of said mouth and less than that of said chamber, and carrying wheels mounted on said blocks and geared to the brush.

9. In a device of the character described, in combination, a casing having an inlet mouth presented toward the working surface, bearing blocks mounted inside said casing, and removable through said mouth, a brush device journaled to said blocks, driving wheels for said brush also journaled to said blocks, and operative connections between said wheels and brush.

10. In a device of the character described, in combination, a casing having an inlet mouth presented toward the working surface, bearing blocks mounted inside said casing, and removable through said mouth, a brush device journaled to said blocks, driving wheels for said brush also journaled to said blocks, operative connections between said wheels and brush, and means operative upon the location of said blocks and their associated parts inside the casing for holding those parts together, and permitting separation upon removal.

In testimony whereof, I hereunto affix my signature.

JAMES B. KIRBY.