April 21, 1936. H. HERTZBERG 2,037,902

SWEEPER

Filed March 25, 1935

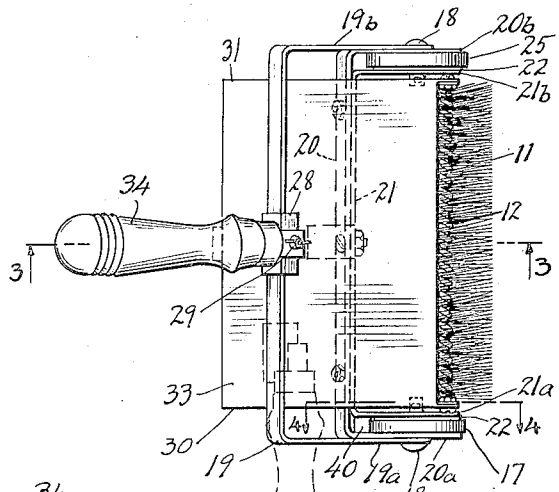

Fig. 1

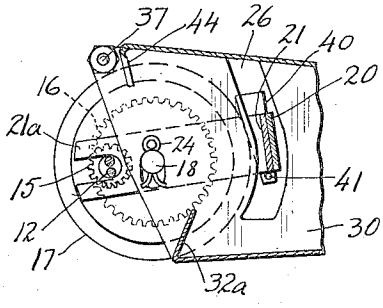

Fig. 4

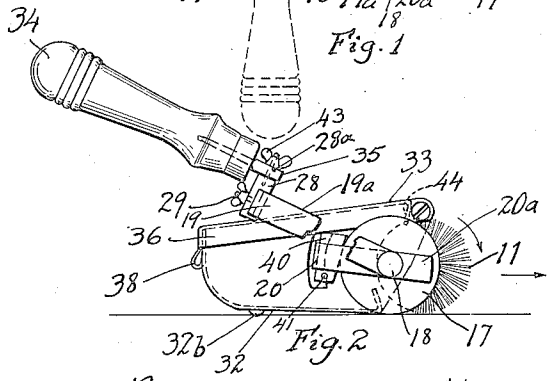

Fig. 2

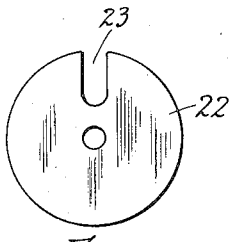

Fig. 5

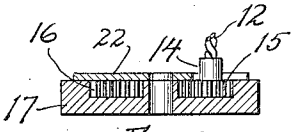

Fig. 6

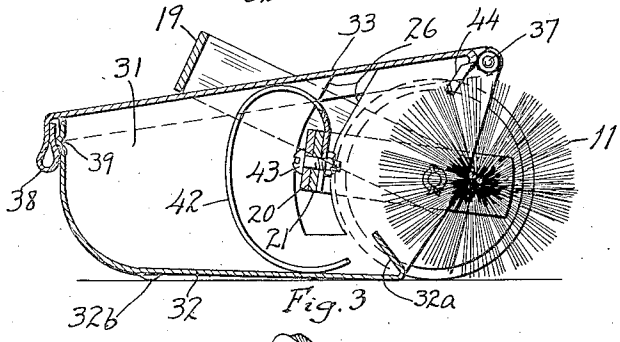

Fig. 3

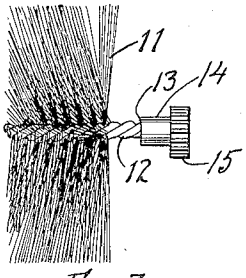

Fig. 7

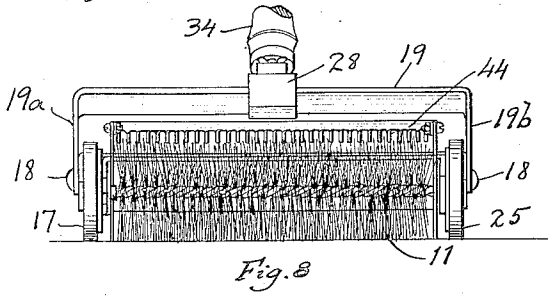

Fig. 8

Harry Hertzberg
INVENTOR

BY Martin Joachimson
ATTORNEY

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SWEEPER

Harry Hertzberg, New York, N. Y.

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8 Claims. (Cl. 15—41)

This invention relates generally to sweepers and more particularly to that type of sweepers used for cleaning carpets and for brushing crumbs, ashes and other refuse off of table covers and floors.

It is an object of the present invention to provide a sweeper of this type with an adjustably mounted brush which will automatically adapt itself to irregularities on the surface being swept.

It is another object to provide means for adjusting the pressure on the brush.

Still another object is the provision of means for maintaining the brush in advanced position.

Another object is to provide means for cleaning the brush.

It is a further object to provide means to prevent the brush from rotating backward or in a direction other than a sweeping direction.

A further object is to provide means to prevent foreign matter getting into the driving gear of the brush.

Yet another object is to provide a receptacle for the swept material having means to prevent such material escaping therefrom.

Still another object is to provide means for readily mounting and demounting the brush.

Other objects and advantages of my improved sweeper will be apparent from the description thereof taken in connection with the accompanying drawing in which—

Figure 1 is a top plan view of my improved sweeper.

Figure 2 is a side elevation thereof.

Figure 3 is a sectional view taken on the plane of the line 3—3 of Fig. 1 with the handle and its fastening means removed.

Figure 4 is an enlarged sectional view taken on the plane of the line 4—4 of Fig. 1.

Figure 5 is a detail view of a gear protecting plate.

Figure 6 is a detail view of the driving traction wheel.

Figure 7 is a detail view of the driving end of the brush shaft.

Figure 8 is a front elevation of my improved sweeper.

My improved sweeper consists of a frame comprising a bail 19 having side bars 19*a* and 19*b* perpendicular to its handle bar 19 on which the handle carrier 28 is slidably mounted and can be fastened thereto by a wing screw 29. On this carrier 28, handle bar 34 is rotatably mounted by means of a tang with perforated head 35 passing over a stud portion 28*a* on carrier 28 and wing nut 43 for clamping it to the carrier in different places on bail bar 19 and under different angles thereto as illustrated by full and dotted lines in Fig. 1. Near the front end of side bars 19*a* and 19*b* a pin 18 passes through an aperture of each bar. Two yokes 20 and 21 of different lengths each provided with side bars 20*a* and 20*b* of the longer outer yoke, and 21*a* and 21*b* of the shorter inner yoke are so fastened to each other that the two side bars 20*a* and 21*a* and 20*b* and 21*b* are parallel to and equally spaced from each other. The pair of yokes 20 and 21 fits into the space between the side bars 19*a* and 19*b* of the bail and is rotatably mounted on pins 18 by apertures near their middle. Inside of side bars 21*a* and 21*b* the pins 18 pass through elongated apertures in the side plates 30 and 31 of the sweeper casing and are held against longitudinal movement by cotter pins 24 adjacent to plates 30 and 31.

The sweeper casing is further composed of plate 32 which extends between side plates 30 and 31 and is curved upward to form bottom and rear sides of the casing. It has an angularly upward extending portion 32*a* at the sweeper brush and two button like projections 32*b* stamped from the metal of the plate to hold the rear portion of the casing uplifted from the surface to be swept. The top of the casing is formed by cover plate 33 which overlaps the lower parts of the casing by an angular rim 36 thereon. It is hinged to the upper front ends of sides 30 and 31 by means of screws and nuts 37. The front edge of plate 33 is bent down angularly backward and formed into a comb 44 to remove lint, threads etc. from the brush to which it is adjacent. The rear portion of rim 36 is provided with a hasp 38 which snaps over a projection 39 on plate 32 to hold the cover tightly closed.

The sweeper brush consists preferably of bristles 11 intertwisted between a pair of wires forming a stem or shaft 12. Both ends of stem or shaft 12 are bare of bristles and one of these ends 13 is inserted into a hollow cylindrical bushing 14 of suitable hard bearing material as brass, textile-laminated phenolic compound or the like. Integral with this bushing at the extreme end of stem 12 a pinion 15 is formed of larger diameter than bushing 14 (see Fig. 7). Pinion 15 meshes into the teeth of an internal gear 16 which forms a part of driving wheel 17 (see Figs. 4 and 6). The axis of driving wheel 17 is formed by the pin 18 which passes through side bars 19*a*, 20*a*, 21*a* and plate 30 of the casing as hereinbefore described. The end of shaft 12 with the bushing 14 passes through the bifurcated end of inner side bar 21*a*,

the other end of shaft 12 passing through an opening near the end of side bar 21*b*, at a point on one side of the pivot pin 18.

At the opposite side plate 31 of the sweeper casing an idler wheel 25 preferably of fiber is loosely mounted with its circular cover plate 22 between side bars 20*b* and 21*b* on the second pin 18. The end of stem or shaft 12 at this side of the sweeper passes through a small circular aperture in circular plate 22 at a point removed from the axis of pin 18 and extends into an annular groove in the side of idler wheel 25 permitting said wheel to turn. On the driving wheel side plate 22 is provided with a slot 23 for removal of stem 12 with pinion 15 from gear 16 and wheel 17.

Between the wheel 17 (Fig. 2) and yoke bar 20, a brake wedge 40 is placed. This wedge is preferably made of fiber and has one longitudinal side leaning against bar 20 and the opposite slanting side against driving wheel 17, and is held against removal by a pin 41 below side bar 20*a* of the yoke.

At the center of yoke bars 20 and 21, an oval curved flat steel spring 42 is fastened by means of screw and nut 43 to the bars as shown in Fig. 3. The spring is so curved that the lowest point of its curved form presses against bottom plate 32. The yoke bars 20 and 21 pass through curved slots 26 to the outside of the casing as illustrated in Fig. 3. This spring 42 normally keeps the inner end of the yoke up and the outer end which engages the brush shaft down so that the brush is always down in contact with the surface to be swept.

From the above description it will be seen that the entire sweeper mechanism is supported on the pins 18 of the driving and idler wheels on which it can be rotated. These pins act as the pivot for a two-armed lever on the short arm of which the brush 11 is mounted and on the longer arm the spring 42 is mounted. In using the sweeper, the force applied to the handle 34 is transmitted through the bail 19 to the drive wheels. The drive wheel 17 by means of the gearing connection with the shaft or brush 11 drives and rotates said brush for cleansing purposes.

The yoke members 20 and 21 pivot around the pins 18 and have their outer ends in engagement with the shaft of brush 11. The elongated slots in the side plates of the casing through which the pins 18 pass permit the wheels and brush to move vertically relative to the casing plates 30 and 31 to compensate for irregularities in the surface being swept. The spring takes up the pressure of the brush against the surface to be cleaned and also keeps the brush lowered to keep the proper pressure against the surface to be brushed and compensates for irregular surfaces when in operation.

The bail which swings on the pivots 18 when pressure is exerted on the bail handle thereon divides the pressure between brush and spring, eliminating any direct pressure against the brush as in other sweepers which produces a very smooth working and efficient cleaning.

The wedge shaped brake on the periphery of the driving wheel is outside of the casing where it is visible and not exposed to the refuse in the casing as ball clutches and internal brakes. It prevents rotation of the brush on the return stroke. The gearing is entirely enclosed within the driving wheel by circular cover plate 22 preventing dirt from entering between the teeth.

The removal of cotter pins 24 from pivot pins 18 permits the disassembling of the entire sweeper for cleaning purposes.

The mounting of the handle bar movably and rotatably on bail 19 is particularly useful for cleaning the steps of stairs with the handle in the dotted position, while for cleaning floors or tables it is to be used in the full line position of Fig. 1.

While this device has been illustrated in only one form it is adaptable to many modifications in its details of construction in view of which it is to be understood that the claims are to be construed and the invention is to be limited only by the scope of the claims and not by the illustrated embodiment.

I claim:

1. In a sweeper, the combination of a bail, a handle secured thereto, a yoke and a casing having a bottom, all mounted on a common axis, a brush having a stem rotatably mounted on said yoke at one side of said axis, a spring on said yoke pressing against the bottom of said casing on the opposite side of said axis and a pair of wheels on said axis, one of said wheels being geared to said stem.

2. In a sweeper, the combination on a common axis, of a bail carrying a handle and having parallel legs, a yoke within said legs having forked arms, and a casing having a bottom and a side plate adjacent to each arm, all mounted on said axis, a brush having a stem rotatable in bearings on said yoke at one side of said axis, a spring on said yoke at the opposite side of said axis pressing against the bottom of said casing for normally urging the yoke upward, a pair of wheels in the forks of said arms on said axis and means to rotate said brush operated by one of said wheels.

3. In a sweeper, the combination of a bail, a yoke, and a casing having a bottom, all mounted on a common axis, a brush having a stem rotatably mounted on said yoke at one side of said axis, a spring on said yoke pressing against the bottom of said casing on the opposite side of said axis and a pair of wheels on said axis, at least one of said wheels being geared to said brush and a handle on said bail to exert manual pressure against said spring and said brush.

4. In a sweeper, the combination of a bail, a pair of pivots carried by said bail, a wheel on each pivot, a brush geared to one of said wheels and a carrier slidably mounted on said bail and a handle rotatably mounted on said carrier.

5. In a sweeper, the combination of a yoke having two pairs of parallel forked arms, a wheel rotatable on a pivot held by each pair of said forked arms, and a wedge between one of said wheels and the rear part of said fork, said wedge being adapted to be set and act as a brake during the rotation of the wheel in one direction and released when the wheel rotates in the opposite direction.

6. In a sweeper, a casing having bottom, rear and side plates, a cover plate hinged on the side plates and an open front, a yoke having a bar passing through openings in said side plates, a spring for lifting said bar, a fork on said yoke outside of each of said side plates, a wheel in each fork, a bail having legs outside of said forks, a pivot pin passing through each leg and having said wheels, said forks, and said side plates mounted thereon, a brush closing the open side of said casing and having a stem journalled in said forks and geared means connecting said stem to one of said wheels for rotation thereby.

7. In a sweeper, a casing, a pair of axially aligned supporting wheels carried by the casing, a rotatable brush operatively connected to one of said wheels, the axis of said brush being disposed forward of the axis of the wheels, said wheels and brush being floatingly mounted relatively to the casing and mechanism for maintaining the wheels and brush in normal operative position including a yoke member rotatably mounted on the wheel axles and having its outer ends in engagement with the shaft of the brush and a spring having one end in engagement with the casing and its other end in engagement with the inner end of the yoke member for urging its inner end upwardly and its outer end downwardly.

8. In a sweeper, the combination of a U-shaped frame having a pair of pivots mounted in opposite sides of the frame in axial alignment with each other, a bail carrying a handle, a wheel, and a casing having a bottom and sides mounted on said pivots within said frame, a brush rotatably mounted in the same sides of said frame as said pivots and to one side of and parallel thereto, and a spring mounted on said frame on the opposite side of said pivots pressing against the bottom of said casing, said bail being adapted to exert pressure against said pivots and thereby against said brush and said spring.

HARRY HERTZBERG.