A crumb sweeper and the like comprising, a housing formed of a pair of sections hingedly joined and detachably interlocked which supports a rotatable brush so that when the sweeper is moved over a surface which has crumbs and the like, the brush bristles will pick up the crumbs, and wherein the sweeper has means engaging the bristles as the brush member rotates for the purpose of dislodging the picked up crumbs from said bristles so that said dislodged crumbs will be emptied into a trough in the housing member.
CRUMB SWEEPER AND THE LIKE

BRIEF SUMMARY OF THE INVENTION

Prior art hand brush members have been used for gathering and/or picking up crumbs and the like as the sweeper unit is moved over a surface, however, so far as is known to applicants, none of such devices provide means in engagement with the brush bristles or brush member for dislodging the pick-up crumbs from said brush, therefore, one of the principal objections to such prior art constructions is that the picked-up crumbs which are gathered on the brush remain on the brush as it continues to rotate, thus reducing the effectiveness of the brush and its pick-up function. In other words, the crumbs adhere to the brush which results in the brush surface being covered with such crumbs and reduces the clean brush area for effective pickup. These objections are obviated with this invention as means are provided in the path of the rotating brush for removing the crumbs from the brush.

Another object of this invention is to provide the means whereby as the brush rotates it is constantly in engagement with means which tend to dislodge the picked-up material on the brush bristles and to cause said picked-up material to be moved and deposited into troughs so that as the brush continues to rotate it always presents a clean pickup surface and effectively performs the sweeping action.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of the crumb sweeper with the housing in closed position.

FIG. 2 is a top plan view with the housing in open position and with a fragmentary view of the brush.

FIG. 3 is a fragmentary plan view taken from the underside.

FIG. 4 is an end elevational view of the housing in the position of FIG. 2, with a portion in section showing the fingers for dislodging the crumbs from the brush.

FIG. 5 is a sectional view taken on line 5—5 of FIG. 1, and

FIG. 6 is a sectional view taken on line 6—6 of FIG. 2.

The sweeper which is hand held and operated has a casing or housing generally designated by the numeral 10 which is formed of a pair of sections 12 and 14 connected together at a hinge line indicated at 16 so that both sections, including the hinge portion thereof, is integrally molded of a plastic material, such as polypropylene, polyallomer, and the like, in an injection molding machine. The section 12 is the lower section and it supports and contains the rotatable brush member, hereinafter described. The other section 14 is the upper section and it forms the closure or cover of said housing and, as shown in FIGS. 1 and 5, is adapted to be detachably secured to the lower section along the free edge thereof.

The upper section 14 has a top wall 15 which is molded to provide a plurality of longitudinally spaced and inwardly extending fingers or prongs generally designated by the numeral 18. As shown, the fingers 18 are arranged in a pair of spaced lines 20 and 21, the fingers or prongs of one line being staggered with respect to the other line. The fingers 18 have a generally conical shape with a pointed tip 22.

The lower section 12 has a bottom wall 24 which is molded to provide an elongated opening 26. The lower section 12 is also provided with a pair of troughs 28, each trough extending the length of the lower section and each trough being adjacent the central elongated opening 26.

The end walls 30 of the lower section 12 are molded to form inwardly extending extensions 32 which are open at the bottom. The extension 32 has a downwardly extending portion 34 provided with a generally U-shaped recess 36 which receives the ends 38 of the brush shaft 40 and which serve as journals therefor. The U-shaped recesses 36 in said extensions have open faces which face towards the bottom of the lower section so that the brush shaft 40 may be inserted therein through the bottom opening of the lower section.

The rotatable brush member generally indicated at 42 is formed of a pair of wire members 44 interwound with the bristles or brush members 46 secured therebetween so that the bristles extend radially outward of said intertwined metal wires to form an annular brush. The intertwined wire members 44 are substantially rigid to form the brush shaft 40. Secured on the brush shaft adjacent each of the opposite ends 38 of the brush shaft is an annular disk 48. The ends 38 of the brush shaft extend laterally outwardly of the disks 48 and are adapted to be received in the recesses 36 of the extensions 32 so that the brush member is rotatably supported.

The brush unit is installed in the lower section 12 of the housing through the bottom of the elongated opening 26. The opposite ends 38 of the brush shaft are seated in the recesses 36 and are normally retained therein to prevent accidental displacement thereof. While FIG. 5 shows the bottom wall 24 directly under the downwardly extending portion 34 which forms the bearing for the rotatable brush shaft, it is clear that the bottom wall 24 only extends inwardly a slight distance from each end 30 at the opposite ends of the elongated opening 26 so as not to interfere with the insertion of the ends 38 of the brush shaft from the underside, as can best be seen in FIG. 3.

Extending upwardly from the bottom wall 24 along the length of opening 26 and immediately adjacent thereto are walls 49, the inner surface 49' of which has a radius to conform substantially to that of the brush member. The inner surface 49' of said walls is spaced slightly from the brush, as best seen in FIG. 6, so as not to interfere with the rotation of the brush.

As can best be seen in FIG. 5, when the two housing sections 12 and 14 are closed, the upper section 14 forms the lid or covering of the housing and encloses the upper portion of the rotatable brush. The brush bristles of the brush unit extend through the elongated bottom opening 26 so that when the unit is manually passed over a surface which has the crumbs, the brush bristles exposed by the elongated opening 26 will extend beyond the bottom plane of the bottom housing, as seen in FIGS. 5 and 6, and as the unit is manually moved over the surface and is pressed against the surface the brush will rotate and pick up the crumbs or other matter from the table surface. Also the disks 48 which have a diameter slightly less than the diameter of the brush will engage the table surface which is engaged by the bristles.

As the brush is rotating during its pickup operation, the bristles will also be engaged by the inwardly extend-
ing fingers or prongs 18 which will cause the material picked up by the bristles to be dislodged from the bristles and as the brush continues to rotate the dislodged material will pass into the two troughs 28. Therefore, the fingers 18 when engaging the rotating brush serve to, in effect, clean the gathered or picked-up material from the bristles so that they continue to rotate over a surface are more or less kept cleared of the gathered or picked-up material and will continue to pickup and gather the material, thereby sweeping the surface. This procedure continues so that the brush continues to present a clean pickup bristle surface.

The elongated opening 26 in the lower section 12 is enlarged at its opposite ends, as indicated at 50, to accommodate the rotating disks 48.

The upper section 14 is shaped to form along the front wall 52 a depending hook 54 which is centrally positioned and which is adapted to cooperate with an opening in the latch 56 formed adjacent the upper edge of the lower section 12 so that the two cooperate to form the locking means when they are inter-engaged so that the upper section is detachably secured and/or locked to the lower section to form the enclosure for the housing, as shown in FIG. 1. The upper section 14 may be unlocked from the lower section 12 by pressing inwardly against the upper front wall to withdraw the hook 54 from the latch opening to unlatch the two sections. By hinging or moving the upper section away from the lower section the brush member and the troughs may be exposed.

Since in the normal operation of the device the brush member is pressed against the surface to be cleaned, the pressure will tend to maintain the brush member in the journal support 34, that is, the pressure will move the brush inwardly in the direction of the interior of the housing rather than outwardly so that the brush member will be retained therewithin. However, the brush member may be removed therefrom exteriorly through the bottom opening 26 of the bottom section 12.

What is claimed is:

1. A crumb sweeper comprising a housing having a lower portion and an upper portion, with said upper portion having a top wall integrally molded of plastic material and connected by an integrally molded hinge, said lower portion having an elongated opening at the bottom thereof, a brush member rotatably supported in said lower housing with the bristles of said brush adapted to extend through said elongated opening so that said bristles extend outwardly below the bottom of said housing, said lower portion having an integrally formed trough adjacent said brush, said upper portion of the housing having a plurality of spaced fingers integrally molded with the top wall of said upper portion and centrally positioned on said top wall and extending inwardly into said housing for engagement with said rotating bristles of said brush so that the crumbs picked up by said brush are removed from said bristles as said brush is rotating in the same direction as when the crumbs were picked up by said rotating brush and deposited in said trough.

2. A structure as set forth in claim 1 in which said lower portion of said housing is provided with a pair of troughs with the rotatable brush member positioned therebetween so that when the fingers remove the material picked up by said brush said material will fall into said trough members.

3. A structure as set forth in claim 1 in which the brush member has a disk on each of the opposite ends thereof, which disks extend exteriorly of the opening.

4. A structure as set forth in claim 1 in which the lower portion of the housing has a pair of spaced end walls each of which has an integrally molded extension extending inwardly, which extensions have a generally U-shaped recess to receive the ends of the brush shaft and serve as journals therefor.

5. A structure as set forth in claim 1 in which the spaced fingers are each of generally conical shape with a pointed tip.

6. A structure as set forth in claim 1 in which a plurality of rows of fingers are provided, with the fingers of one row staggered with respect to the other row.