Jan. 19, 1954 R. L. ANDERSON ET AL 2,666,309

FLEXIBLE DUSTPAN

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Fig. 1.

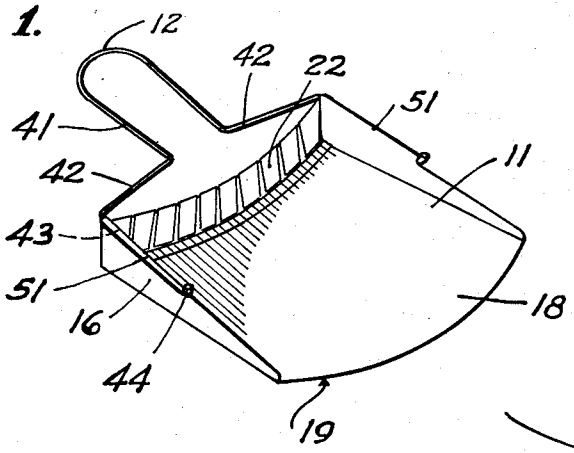
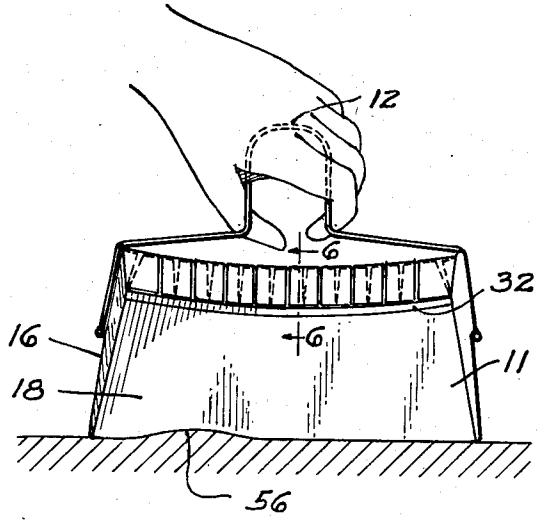


Fig. 2



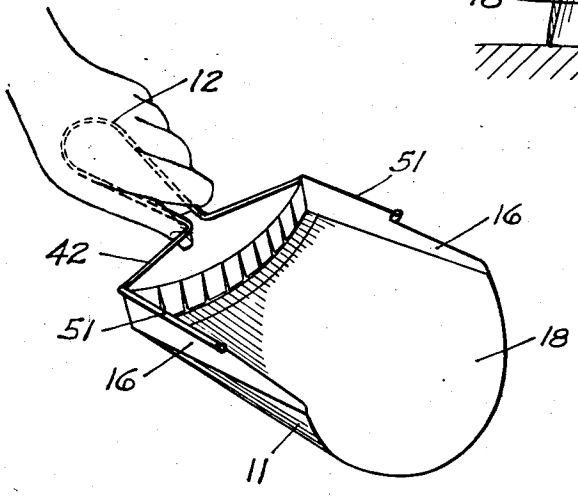


Fig. 3

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FLEXIBLE DUSTPAN

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Fig. 4.

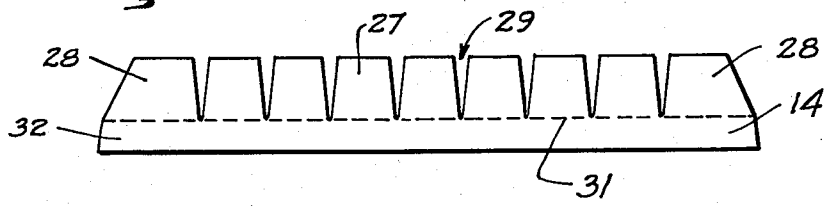


Fig. 5.

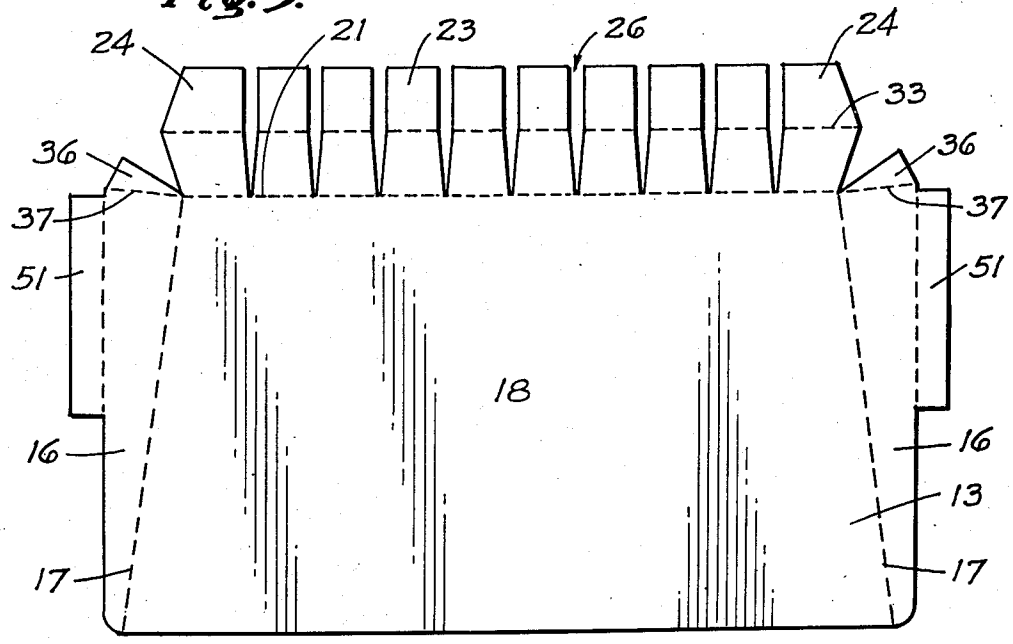


Fig. 6.

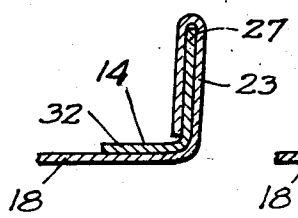
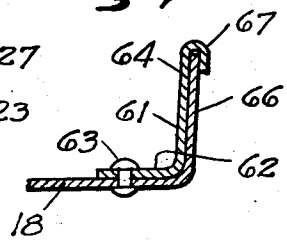


Fig. 7.



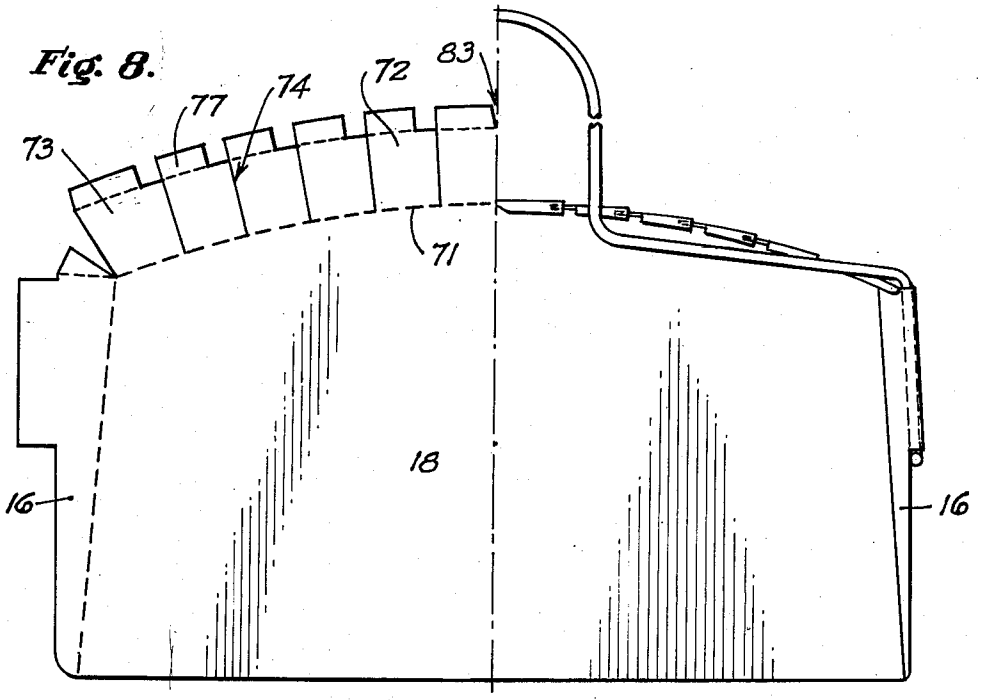
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Fig. 8.



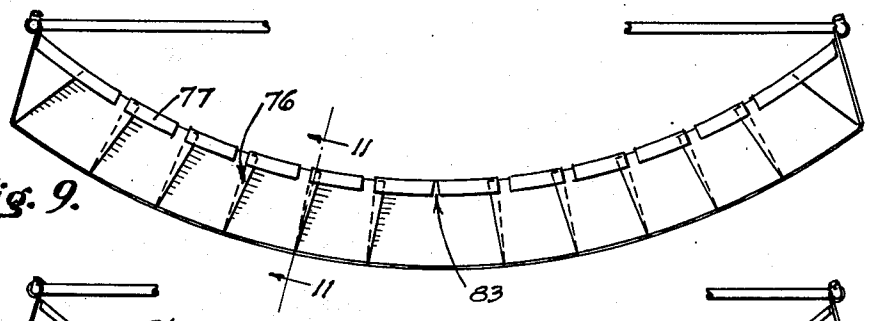


Fig. 9.

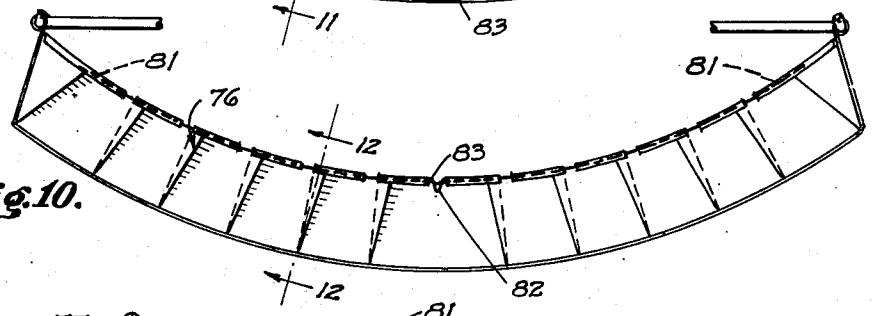


Fig. 10.

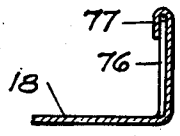


Fig. 11.

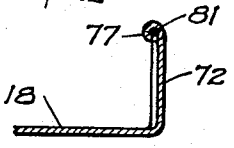


Fig. 12.

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UNITED STATES PATENT OFFICE

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FLEXIBLE DUSTPAN

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Application April 4, 1950, Serial No. 153,886

7 Claims. (Cl. 65—20)

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This invention relates to surface cleaning devices and more particularly to dust pans used in cooperation with a broom or the like for removing sweepings from floors or other surfaces.

The conventional dust pan is provided with a contact or leading edge of substantially rigid construction which is placed in contact with the floor and sweepings thereupon swept over this edge onto the pan bottom. Due to its rigidity, the leading edge of the conventional pan does not conform to the irregularities or undulations often present in floors. These prevent the edge of the pan from contacting the floor uniformly throughout the length of the edge, the result being that dust is swept under instead of into the pan, leaving dust on the floor when the pan is raised.

It is therefore an object of the present invention to provide a dust pan of practical and economical design, having a thin contact or leading edge to facilitate the transfer of sweepings from a floor or other surface onto the pan as by sweeping with a broom, so that no objectionable dustline is left at the line of contact between the pan edge and the surface when the pan is raised.

Another object of the invention is the provision of a dust pan in which substantially the entire bottom has a high degree of flexibility so as to make it possible to attain a reasonably close contact between the contact edge of the pan and the surface from which dust is being transferred, even though that surface may not be absolutely flat, as is frequently the case with warped floor boards, linoleum covered floors, concrete floors, and many other surfaces.

Still another object of the invention is the provision, in a dust pan of the above character, of practical and economical means of attaining sufficient flexibility in the entire pan and handle assembly to permit changing the form of the pan from a relatively flat shape required for receiving dust or sweepings, to a scoop shape and vice versa, by hand manipulation. The scoop shape facilitates both the carrying of sweepings in the pan, and emptying of the sweepings from the pan into bags or other receptacles having relatively small openings.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses preferred embodiments thereof.

With reference to the drawings:

Fig. 1 is a perspective view of one form of the instant invention;

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Fig. 2 is an end view of the dust pan in inclined position showing the leading edge conforming to an undulating surface;

Fig. 3 is a perspective view of the dust pan flexed into scoop shape;

Figs. 4 and 5 show, respectively, blanks for a flexible insert, and the body of one form of the invention;

Fig. 6 is a section taken at 6—6 in Fig. 2;

Fig. 7 is a section taken at 6—6 in Fig. 2 but showing a modified construction in this area for a second form of the invention;

Fig. 8 is a composite plan view showing at the left the blank, and at the right the completed structure of a third form of the invention;

Fig. 9 is an end view of the completed pan shown in Fig. 8;

Fig. 10 is an end view of a fourth form of the instant invention;

Fig. 11 is a section taken at 11—11 in Fig. 9; and

Fig. 12 is a section taken at 12—12 in Fig. 10.

Four forms or species of the instant invention are shown in the drawings; the first in Figs. 1 through 6; the second in Fig. 7 as modifying the first; the third in Figs. 8, 9, and 11; and the fourth in Figs. 10 and 12, as modifying the third form.

The first form, shown in Figs. 1 through 6, comprises a pan body 11 to which a yoke type, spring wire handle 12 is pivotally secured. The body is formed from a blank 13 (Fig. 5) and an insert blank 14 (Fig. 4).

Side walls for the pan body are formed by bending upwardly marginal portions or side walls 16 of the blank 13 along the dotted lines 17 (Fig. 5). The pan bottom wall 18 is outlined by the lines 17, a leading or contact edge 19 and a rear boundary indicated by the dotted line 21. The bottom 18 is preferably made from thin, flexible, sheet material.

An articulate rear wall 22 rises from the bottom wall 18 along the line 21 and extends from one side wall to the other. It comprises a rear section of the blank 13 assembled with the insert 14. This rear section of the blank is formed with a series of central members or fingers 23 and end members or thumbs 24, each member being united with the bottom wall only and spaced from the next member by a notch or slit 26 which extends inwardly to the line 21.

The insert 14 is likewise formed with central members or fingers 27 and end members or thumbs 28 separated by notches or slits 29 extending inwardly to a line 31. The insert members 27, 28 are bent upwardly along the line 31

at substantially right angles to a base strip 32 as indicated in Fig. 6, and a similar angular bend is made in the blank 13 along the line 21.

The insert 14 is assembled with the blank 13 by placing the base strip 32 on the pan bottom with the bend line 31 substantially coinciding with the bend line 21; then folding the body members 23, 24 inwardly along a line 33 and thence downwardly toward the strip 32. Thus assembled, the body notches 26 and insert notches 29 are staggered so that no open spaces remain in the assembled rear wall 22 which thus acts as a solid wall to prevent sweepings from falling out at the rear of the pan, while also permitting the wall to flex with the bottom wall 18 due to the above described notched structure of the rear section of the blank and the insert.

To unite the side walls 16 to the rear wall 22, end flaps 36 on the side walls are folded inwardly along the lines 37 and secured within the folds of the thumbs 24. Thus, the insert 14 is confined between the bent portions of the fingers and thumbs 23, 24, and the side walls 16 of the pan body.

The handle 12 is preferably made from wire having resilient and springlike qualities. The wire is bent at a central portion into a substantially U-shaped grip portion 41. At the extremities of the U-shaped formation the wire is bent outwardly in substantially equal and diverging lengths 42. At the ends of these lengths, the wire is bent angularly to form substantially parallel arms 43, and upturned stops 44 are formed at the free ends of these arms.

Connection between each side wall and the handle 12 is effected by curling tabs 51 of the side walls over the arms 43 of the handle to form two elongated pivotal connections between body and handle.

The flexible bottom of the pan with its thin and flexible leading edge 19, preferably slightly bowed downwardly as shown in Fig. 1, may be placed in contact with a floor or other surface having undulations such as shown at 56 in Fig. 2, and in position to receive sweepings.

Due to its flexibility, the leading edge 19, under slight downward pressure, conforms to the undulations, and the edge remains in close contact with the floor during application of this pressure so that the sweepings may be transferred from the floor to the pan, leaving substantially no dust line on the surface when the pan is raised.

The flexible structure imparted to the back or rear wall of the pan by the notched structure, comprising the fingers and thumbs 23, 24, 27 and 28 of the body and insert, permit the back to be bowed downwardly, as shown in Fig. 3, and the bottom 18 to be bowed into scoop formation by inwardly directed hand pressure on opposite sides of the U-shaped portion 41 of the handle 12. This scoop formation of the pan body permits the operator to pour or discharge the contents of the pan into a bag or other receptacle without spilling the contents of the pan, the scoop directing the contents through a relatively small opening in the bag or receptacle.

The second form of the invention is a modification, shown in Fig. 7, of the first form shown in Figs. 1 through 6. In this second form, an insert 61, comparable in function to insert 14 in the above described first form of the invention, is secured along its base strip 62 to the bottom wall 18 of the pan by one or more rivets 63 or other suitable means. The fingers 64 and thumbs of the insert 61 are longer than the fingers 66 and thumbs of the body, and the upper margin 67 of each of the insert fingers and thumbs is bent rearwardly and downwardly over the body fingers and thumbs. In this structure, the notches in the body and insert portions of the rear wall members are staggered as in the first described form. This second form thus functions in the same manner as the first; a principal distinction lying in the manner of retaining the insert in its assembled position.

The third form of the invention (Figs. 8, 9 and 11) is similar to the first and second forms described above excepting in the structure of the flexible rear wall. In this third form, the rear section of the blank, shown in the left half of Fig. 8, merges with the bottom wall 18 along an arcuate line 71, extending from one side wall 16 to the other, and is divided into a series of central members or fingers 72 and end members or thumbs 73 by notches or slits 74 which extend from the periphery of the blank inwardly to the arcuate line 71. These members, 72, 73 when bent upwardly along the line 71, overlap each other, as shown at 76 (Fig. 9). Tabs 77, formed at the outer margin of each of the members 72, 73 are bent downwardly over the overlapped portions 76. Thus the several members 72, 73, form a flexible rear wall, each member being movable together with the bottom wall 18 and laterally relative to the next member, as in the first and second forms described above, when the bottom is flexed.

The fourth form of the invention (Figs. 8, 10 and 12) is similar to the above described third form but with the addition of a wire insert 81 (Figs. 10 and 12) which may be provided to reinforce and maintain alignment of the several members 72, 73, of the rear wall as they are flexed. The wire is shorter than the minimum length of the top of the rear wall and is assembled with these upstanding members by curling the tabs 77 over it as shown in Fig. 12.

To maintain the wire centrally disposed in the curled tabs at the top of the wall, a short loop 82 may be formed in the wire, and the loop locked in a notch 83 formed in a central member 72 (Fig. 10).

In each of the four forms of the invention described herein, the resilient handle 12 and its arms 43, pivotally connected to the side walls 16 of the pan body, normally hold the side walls apart under yielding pressure, keep the articulate rear wall preferably in slightly curved form, and retain the flexible bottom of the pan slightly bowed as shown in Fig. 1.

When the handle is held in the usual manner and squeezed slightly by the hand holding the pan, the opposite side arms 43 move the side walls inwardly, thereby increasing the bow in the flexible bottom and articulate rear walls to the desired degree of scoop formation for use in collecting sweepings or disposing of the collected sweepings.

Furthermore, in each of the forms the several members of the rear wall are moved laterally, or oscillated slightly, relative to each other so that the wall may follow the curvature or bow of the bottom wall as when the pan is transformed into the scoop shown in Fig. 3.

It will be understood from the foregoing description that other variations in form and structure of the invention may be made without departing from the spirit and scope of the invention, the forms hereinabove disclosed being merely preferred embodiments thereof.

We claim:

1. In a dust pan or similar article, a bottom wall of flexible material having a thin contact or leading edge and bounded on each of two opposite sides contiguous to said leading edge by upstanding side walls, and by an articulate rear wall comprising a series of upstanding members disposed between said side walls, each of the two opposite end members in said series being united at its base with said bottom wall and at its side with an adjacent end of a said side wall, the remainder of said upstanding members each being united at its base with said bottom wall only and freely movable laterally relative to its next adjacent member when said bottom wall is flexed into a scoop formation between said side walls by application of pressure directed inwardly against said side walls.

2. A dust pan of the character set forth in claim 1 in which the side walls are united to a spring handle having a pair of arms extending outwardly from said handle, each of said side walls being pivotally connected to one of said arms, said spring handle normally acting through said pivotal connections to urge said side walls outwardly under the yielding pressure exerted by the normal expansion tendency of the handle to maintain said bottom wall normally in a slightly bowed form.

3. A dust pan of the character set forth in claim 1 in which the upper end of each upstanding member is formed with a tab which is bent downwardly over a portion of its next adjacent upstanding member to guide each said member in its movements.

4. A dust pan of the character set forth in claim 3 in which the tabs are curled downwardly and a wire extends longitudinally through the curled tabs to maintain alignment of the upstanding members and to reinforce the rear wall.

5. A dust pan of the character set forth in claim 4 in which a centrally disposed curled tab is formed with a notch therein, and a short loop formed in the wire extends through said notch to lock the wire in centrally disposed relation in the series of curled tabs.

6. A dust pan of the character set forth in claim 1 in which the articulate rear wall comprises two series of upstanding members, the members of one of said series being united to said bottom wall and retaining the other series in staggered relation and in sliding engagement with said first mentioned series of upstanding members.

7. A dust pan of the character set forth in claim 6 in which one of the series of upstanding members is united with the bottom wall and the other series of upstanding members is united with a base strip, said base strip being secured to said bottom wall.

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