Feb. 17, 1948. E. A. STEIN 2,436,234

SHOE CLEANER

Filed May 28, 1945 2 Sheets-Sheet 1

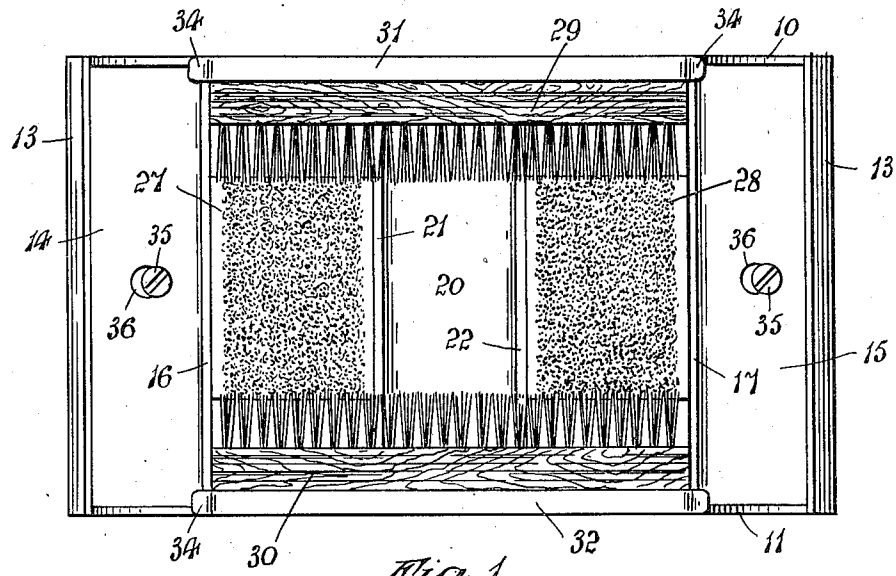


Fig. 1.

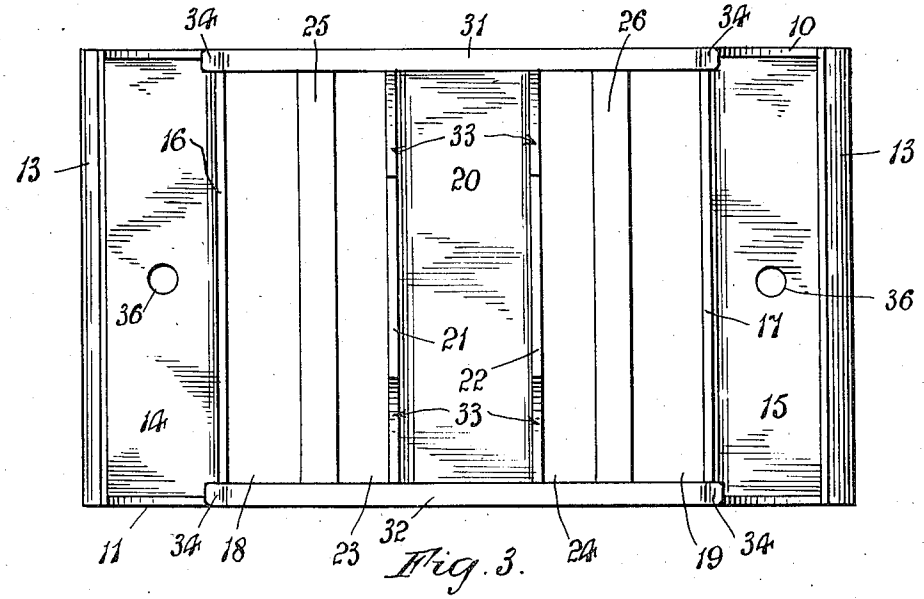


Fig. 3.

INVENTOR.
Edward A. Stein.
BY
Stanley Lightfoot.
ATTORNEY.

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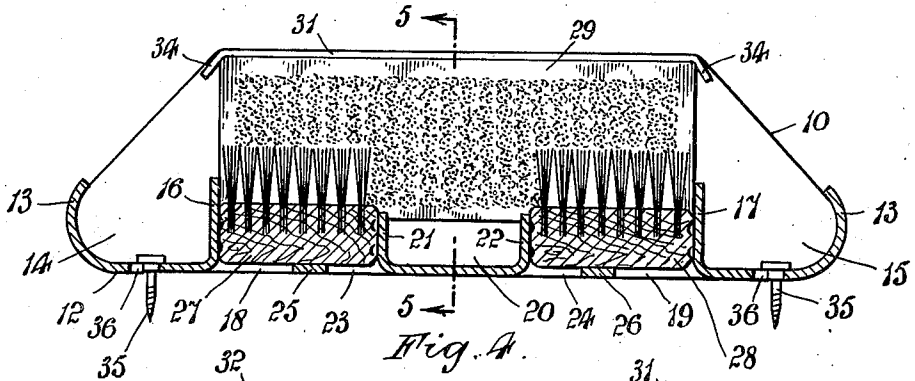


Fig. 4.

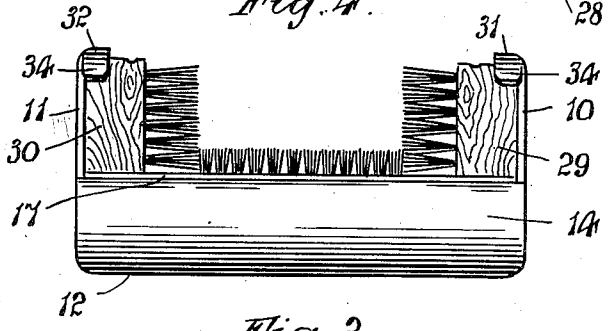


Fig. 2.

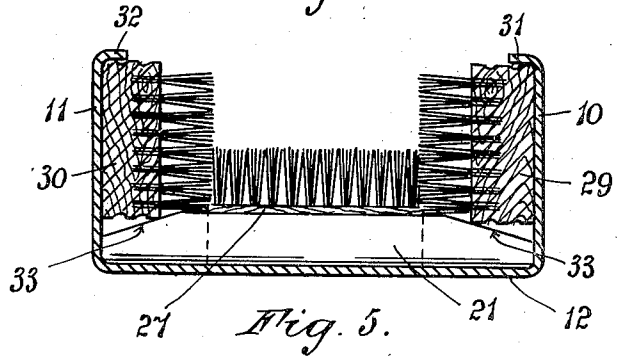


Fig. 5.

INVENTOR.
Edward A. Stein.
BY
Stanley Lightfoot.
ATTORNEY.

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UNITED STATES PATENT OFFICE

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SHOE CLEANER

Edward A. Stein, Detroit, Mich.

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8 Claims. (Cl. 15—161)

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This invention relates to shoe cleaning devices such as may be affixed to a door step or porch to enable persons entering a house to first clean off the dirt or mud from the shoes, and has for its object to provide a simple and easily assembled device for such purpose in which the brushes may be readily replaced from time to time without requiring the unscrewing or removal of fastening bolts or other such means.

Still further the said invention has for its object to provide for an interlocking arrangement of brushes wherein the several brushes assist in maintaining each other in firm position.

The said invention further contemplates, in such an arrangement, provision for a snap action engagement for locking certain of the brushes in position; and, still further, for the utilization of the walls of transverse dirt-receiving troughs as a means of positioning the brushes in the device.

Still further objects or advantages additional or subsidiary to the aforesaid objects, or resulting from the construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may provide the novel construction and arrangement of parts wherein a brush holder is provided with transverse walls forming a central and two end dirt-receiving troughs, between which troughs a pair of transverse upwardly facing brushes are accommodated, and side walls against which the backs of opposed side brushes are held by flanges at the top of said side walls and wedging surfaces on the top of the walls forming the intermediate transverse trough, the end rows of bristles of the lower brushes abutting and engaging the ends of the lower rows of bristles of the side brushes. All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawings, wherein:

Figure 1 is a plan of a shoe cleaner embodying the said invention;

Figure 2 is an end elevation of the same;

Figure 3 is a plan of a brush holder or frame with brushes removed;

Figure 4 is a longitudinal vertical section of the complete device as shown in Figure 1; and

Figure 5 is a cross section of the same taken on a plane indicated by the line 5—5 in Figure 4.

Similar characters of reference indicate similar parts in the several figures of the drawings.

The illustrated form of the invention shows a brush holder comprising a sheet metal frame

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having side walls 10 and 11 extending upwardly from a base, generally numbered 12, the ends of which base are turned up at 13 to form scrapers for the sole of a shoe and also to form the outer walls of dirt-receiving troughs 14 and 15, the inner walls 16 and 17 of the said troughs being formed by punching out from the material of the said base 12 and bending upwardly, thus leaving in the base the transverse slots 18 and 19, respectively. The troughs 14 and 15 thus extend transversely across the ends of the brush holder.

A centrally located transverse trough 20 is similarly formed by punching up side walls 21 and 22, thus leaving the transverse slots 23 and 24 in the base of the brush holder, these slots being separated from the aforementioned slots 18 and 19 by the cross bars 25 and 26.

The said cross bars 25 and 26 form supports for the backs of brushes 27 and 28 positioned between the walls 16 and 21, in the one case, and between the walls 22 and 17, in the other case, so that the said walls hold the backs of the said brushes 27 and 28 snugly in position in the base of the holder with the bristles of the brushes extending upwardly.

29 and 30 are side brushes positioned with their backs against the side walls 10 and 11, respectively, so that their bristles are opposed, the upper edges of the backs of the said brushes 29 and 30 being engaged beneath inwardly turned flanges 31 and 32 on the said side walls 10 and 11 and the lower edges of the backs of the said brushes being engaged by the upper edges of the transverse walls 21 and 22, as clearly shown in Figure 5, which walls are beveled or cut away at an angle, as at 33, so that the tendency of such engagement with the backs of the said brushes is to exert a force thereon in such direction as to lock the brush backs beneath the said flanges 31 and 32 by a form of snap action when the brushes are pressed into position.

The lower portions of the ends of the said brushes 29 and 30 are engaged between the upper portions of the transverse walls 16 and 17; and the upper corners of the backs of the said brushes 29 and 30 are also engaged by lugs 34 bent downwardly at the ends of the said flanges 31 and 32. Thus the said brushes 29 and 30 are firmly but removably held in position with their backs against the side walls of the holder without additional fastening means, other than the presence of the transverse brushes 27 and 28, as will be described.

In the design shown, the transverse brushes actually consist of a single brush similar to 29 or

30 sawed into two halves, the holder being so proportioned as to width that the ends of the backs of these short transverse brushes extend somewhat beyond the spacing of the opposed ends of the bristles of the side brushes 29 and 30, as clearly shown in Figure 5, so that the bristle ends of the side brushes will engage and interlock to some extent with the end rows of the bristles of the brushes 27 and 28 and so serve to lock the said lower brushes 27 and 28 in position in the base structure and between the lower portions of the said side brushes.

Thus, in assembling the device, the side brushes are first snapped into position beneath the flanges 31 and 32 of the side walls, by virtue of the wedging action of the transverse walls 21 and 22 previously referred to, and the brushes 27 and 28 are thereafter forced down between the opposed bristles of the side brushes into their seating upon the cross bars 25 and 26 of the base structure, whereupon the brush assembly is very firmly maintained in position by the holding engagements described and by their opposition to each other without the use of additional screws or fastenings for that purpose.

When it is desired to disassemble the structure for brush replacement or cleaning, or for any other reason, the brushes 27 and 28 are first removed by applying thumb pressure to the backs thereof through the openings 18 and 19 in the base structure and forcing the said lower brushes upwardly and outwardly from the holder, following which the side brushes may be swung inwardly and upwardly utilizing the flanges 31 and 32 as pivots by simply using sufficient pulling force on the lower parts of the brushes to overcome the wedging resistance of the bevelled walls 21 and 22.

I prefer to make the walls 16 and 17 of a height extending above the backs of the positioned brushes 27 and 28 in order to provide a scraper action at such points; and any suitable means which may be convenient may be employed for affixing the brush holder to a floor, pins 35 and slots 36 being illustrated as a simple form of such fastening.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention, and it is desired that the specification and drawing be read as being merely illustrative of a practical embodiment of the said invention and not in a strictly limiting sense.

What I claim is:

1. In a device of the class described, a brush holder comprising a base having a series of struck-up walls arranged in spaced apart relation, transverse troughs formed between alternate sets of said series of struck-up walls with spaces between said troughs to accommodate and frictionally grip the backs of upwardly facing brushes, and side walls flanged along their upper edges to accommodate and frictionally grip the backs of laterally positioned opposed brushes.

2. In a device of the class described, a brush holder comprising a base having a series of struck-up spaced walls, said walls being arranged to provide transverse troughs between alternate sets of said struck-up walls in spaced relation to one another, upwardly facing and transversely extending brushes positioned in the spaces between said troughs and frictionally held in place by the opposed surfaces of certain of said struck-up walls, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, and flanged side walls engaging the backs of said laterally disposed brushes.

3. In a device of the class described, a brush holder comprising a base having a series of struck-up spaced apart walls, said walls being arranged to provide transverse troughs between certain of said struck-up walls in spaced relation to one another, upwardly facing and transversely extending brushes removably positioned and frictionally retained in the spaces between said troughs, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, the bristles of said first mentioned brushes exerting a positioning impingement on the ends of the lower bristles of said last mentioned brushes, and flanged side walls engaging the backs of said laterally disposed brushes, said laterally disposed brushes being yieldingly and removably held in place by said positioning impingement of the bristles of said first mentioned brushes.

4. In a device of the class described, a brush holder comprising a base having a series of upstanding spaced apart walls to provide intermediate and end transverse troughs arranged in spaced relation to one another, upwardly facing and transversely extending brushes removably positioned and frictionally held between the upstanding walls in the spaces between said troughs, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, and flanged side walls engaging the backs of said laterally disposed brushes with the flanges of said side walls overlying the upper edges of the backs of said laterally disposed brushes, the end portions of the walls of said intermediate trough being inclined downwardly toward said flanged side walls for engaging and supporting the lower edges of the backs of said laterally disposed brushes, said inclined walls cooperating with the flanges on said side walls to frictionally grip the backs of said laterally disposed brushes.

5. In a device of the class described, a brush holder comprising a base having a series of struck-up walls to provide intermediate and end transverse troughs formed in spaced relation to one another, upwardly facing and transversely extending brushes positioned in the spaces between said troughs and frictionally held between certain of said struck-up walls laterally disposed opposed brushes spanning the ends of said first mentioned brushes, and flanged side walls engaging the backs of said laterally disposed brushes with the flanges overlying the upper edges of the backs of said last mentioned brushes, the end portions of said walls of said intermediate trough being beveled and providing inclined surfaces extending downwardly toward said flanged walls to engage the lower edges of the backs of said laterally disposed brushes at a locking angle with respect to said side walls and flanges.

6. In a device of the class described, a brush holder comprising a base having a series of struck-up walls to provide transverse troughs arranged in spaced relation to one another, upwardly facing and transversely extending brushes positioned in the spaces between said troughs and yieldingly engaged by certain of said struck-up walls, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, the bristles of said first mentioned brushes exerting a positioning impingement on the ends of the lower bristles of said last mentioned brushes, and flanged side walls extending transversely of said struck-up walls engaging the backs of said

laterally disposed brushes, and the innermost walls of said end troughs engaging the ends of said laterally disposed brushes to thereby prevent longitudinal displacement of said brushes.

7. In a device of the class described, a brush holder comprising a base having a series of struck-up walls to provide intermediate and end transverse troughs arranged in spaced relation to one another, upwardy facing and transversely extending brushes positioned in the spaces between said troughs and yieldingly and frictionally engaged by certain of said struck-up walls, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, and flanged side walls engaging the backs of said laterally disposed brushes with the flanges thereof overlying the top edges of said brushes, the end portions of the walls of said intermediate trough being inclined downwardly toward the side walls for interlockingly engaging and supporting the lower edges of the backs of said laterally disposed brushes, and the innermost walls of said end troughs being disposed for engaging the ends of said laterally disposed brushes to thereby prevent longitudinal displacement of said laterally disposed brushes.

8. In a device of the class described, a brush holder comprising a base having a series of upstanding spaced apart walls to provide intermediate and end transverse troughs arranged in spaced relation to one another, upwardlly facing

and transversely extending brushes positioned in the spaces between said troughs and yieldingly and frictionally engaged by certain of said upstanding walls, laterally disposed opposed brushes spanning the ends of said first mentioned brushes, and side walls having inwardly directed flanges extending along their upper edges engaging the backs of said laterally disposed brushes, the end portions of said walls of said intermediate trough being beveled to provide inclined surfaces extending downwardly in the direction of said side walls to engage the lower edges of the backs of said laterally disposed brushes at a locking angle, and the innermost walls of said end troughs projecting beyond the ends of said first mentioned brushes for engaging the ends of said laterally disposed brushes to thereby prevent longitudinal displacement of said second-mentioned brushes.

EDWARD A. STEIN.

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