Sept. 12, 1967 S. TAMNY 3,340,558

DISPOSABLE BROOM ASSEMBLY

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FIG. 1.

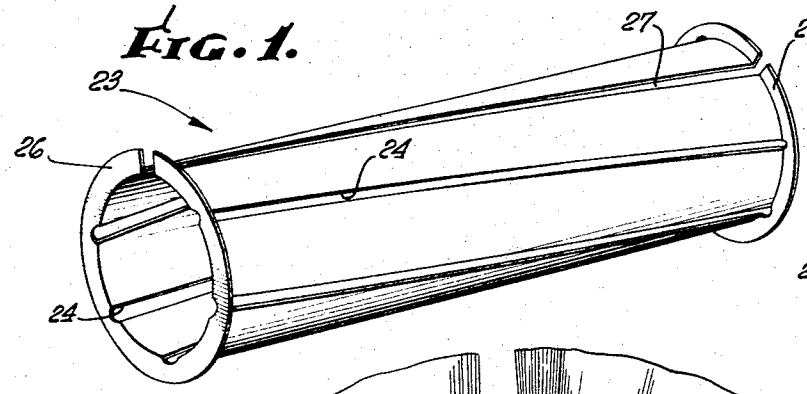


FIG. 1a.

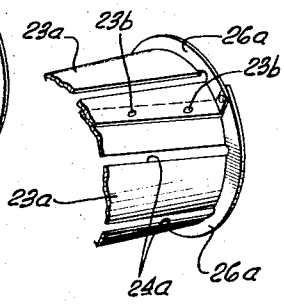


FIG. 2.

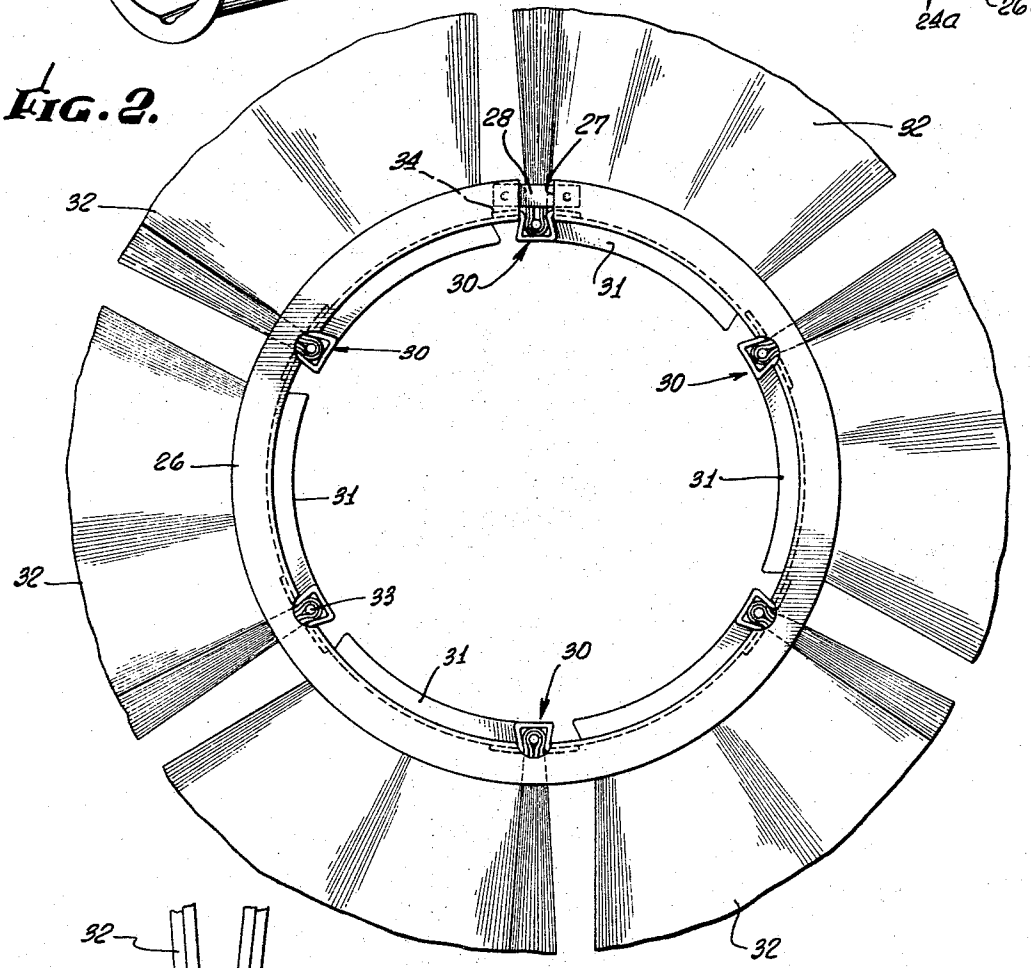
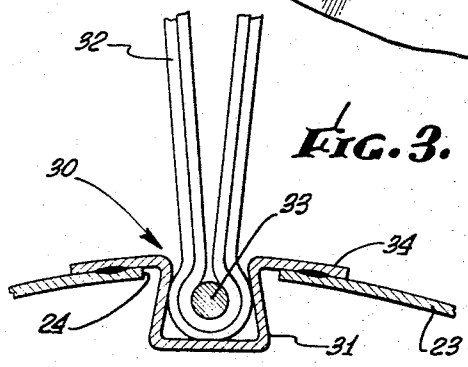


FIG. 3.



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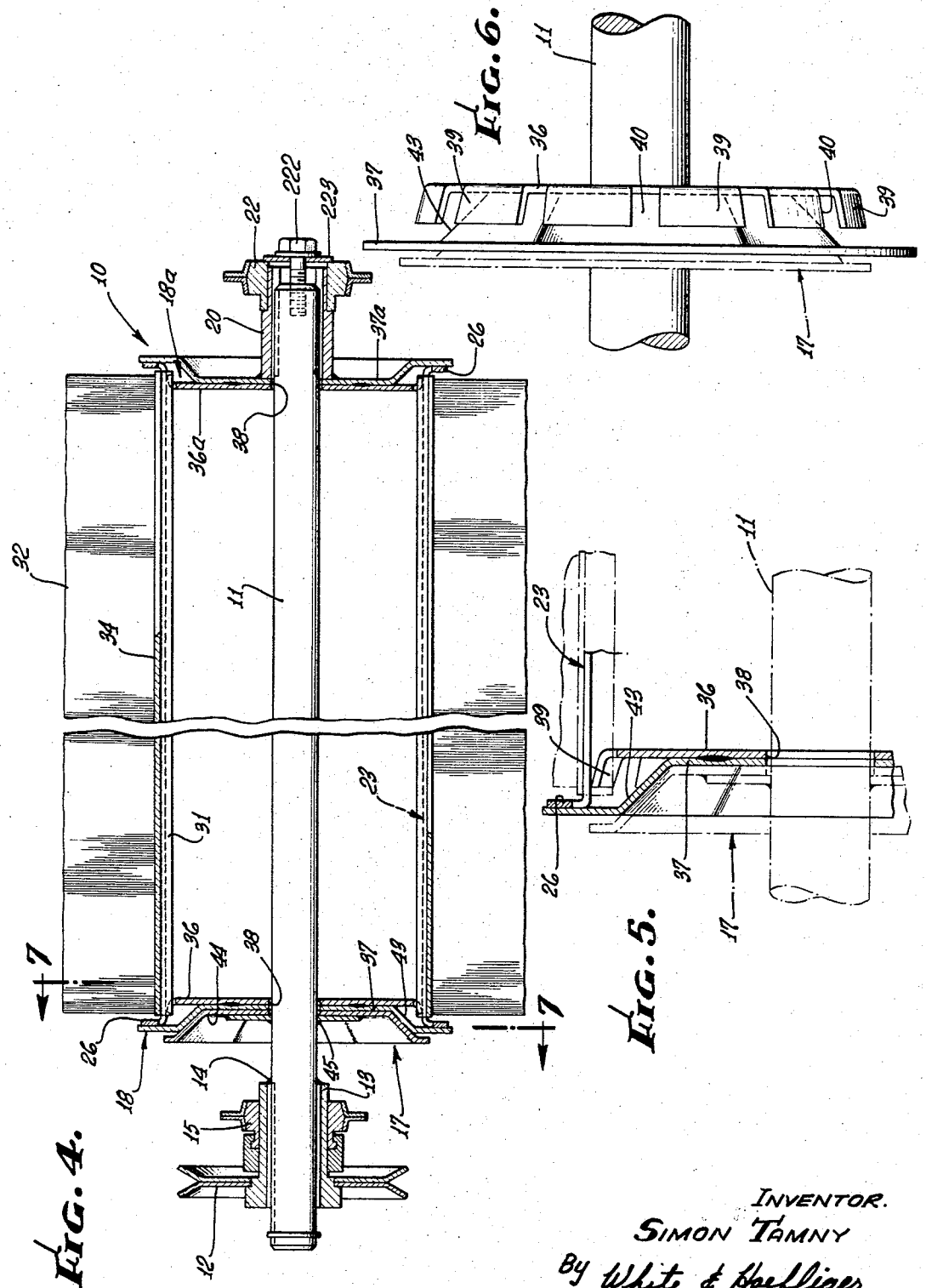


FIG. 4.

FIG. 5.

FIG. 6.

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DISPOSABLE BROOM ASSEMBLY

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FIG. 7.

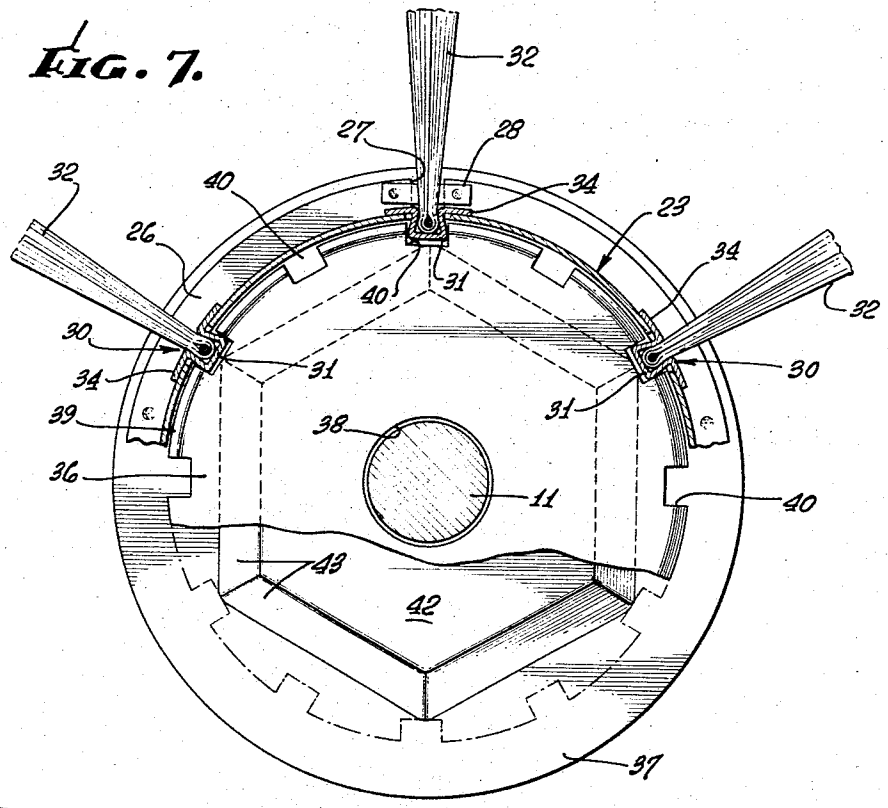


FIG. 8.

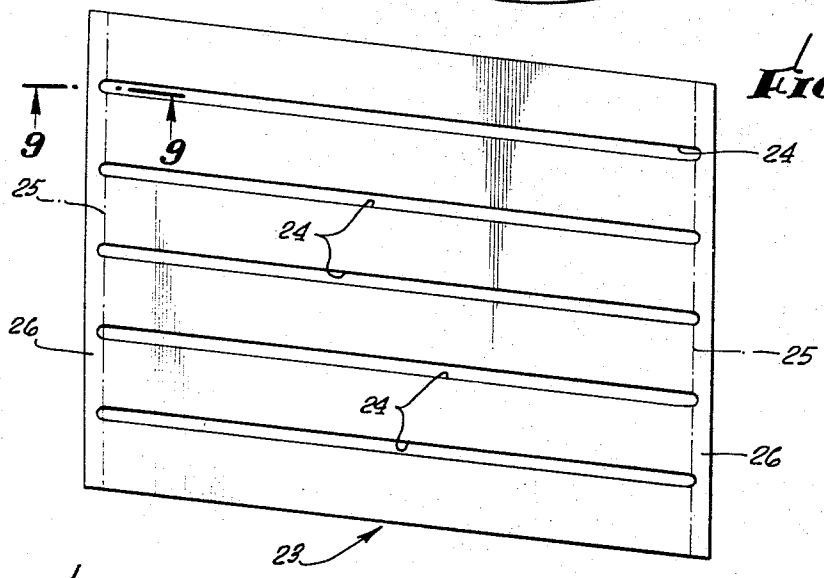
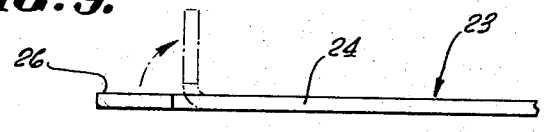


FIG. 9.



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3,340,558

DISPOSABLE BROOM ASSEMBLY

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Filed Apr. 11, 1966, Ser. No. 541,552
12 Claims. (Cl. 15—182)

This invention presents new developments in power driven sweeper brooms of generally cylindrical configuration and comprising bristles mounted to a core or drum structure. As in the case of prevalent broom structures of this type, the invention provides the bristles in the form of so-called brush strips mounted to a core or drum, but otherwise departs from the conventional.

Heretofore the construction of such brooms has been predicated significantly upon the provision of core structures designed for permanency, and the replaceability from time to time of brush strips as the bristles become worn. Involved therefore have been relatively expensive core construction, and various inconveniences and expenses necessitated by the brush strip replacements.

The invention has for its general object to provide a new brush construction which because of its initial low cost and simplicity, becomes economically and practically disposable as a core and brush strip assembly when the bristles become worn.

Further contemplated are new mounting and drive features in conjunction with the core proper, that reduce to quick simplicity the broom replacement.

Generally, these objectives are accomplished by formation of a sheet metal core shell in a manner permitting of simple and direct slotting and shaping operations, provision for easy insertion and retention of the brush strips, and the use of mounting and drive parts capable of formation economically as sheet metal stampings.

Structurally, the invention provides for the shell formation by the simple and direct process of slotting sheet metal in distended form, then rolling the slotted metal to cylindrical configuration, and as an important feature, deforming the ends of the sheet to form flanges as integral continuations of the sheet so that the shell with its flanges are produceable from the same sheet stock. The slots are formed to extend continuously between the flanges, thus to accommodate brush strips correspondingly accommodated to the full length of the shell and retained between the flanges. This becomes the disposable broom.

For convenient support and drive of the shell, I have devised inserts received within the shell ends and so associated therewith as to be capable of receiving and driving against the brush strips while frictionally engaged against the shell, thus to be easily insertable and removable.

The invention has various additional features and objects, all of which together with the details of an illustrative embodiment will be understood from the following description of the accompanying drawing, in which:

FIG. 1 is a view showing in perspective the broom core shell as formed after rolling;

FIG. 1A is a fragmentary view showing a variational form of the shell formation;

FIG. 2 is an enlarged end view showing the brush strips inserted into the shell;

FIG. 3 is an enlarged showing of the brush strip accommodation within the slotted shell;

FIG. 4 is a view showing in longitudinal cross section the disposable broom as mounted on a driving shaft with driving means releasably associated with the shell;

FIG. 5 is an enlarged fragmentary section showing the shell driving insert;

FIG. 6 shows in elevation the insert as withdrawn from the shell;

FIG. 7 is an enlarged cross section taken on broken line 7—7 of FIG. 4;

FIG. 8 is a view illustrative of slotted sheet stock from which the shell is rolled; and

FIG. 9 is a fragmentary enlarged section on line 9—9 of FIG. 8.

In reference first to FIG. 4, in the use environment of accommodation within a power sweeper, the disposable broom structure generally indicated at **10** and as detailed in FIG. 2, is mounted on shaft **11**, one end of which is driven as by sheave **12** on sleeve **13** splined to or welded at **14** to the shaft, the sleeve being journaled within bearing **15** and the shaft having driving relation with the later described driving head **17** and insert structure **18**. At its opposite end the shaft carries a removable sleeve **20** journaled within bearing **22**, the sleeve carrying insert plate structure **18***a* which may correspond to the insert **18** at the opposite end of the shell. The sleeve is retained within and shouldered to bearing **22** by nut **222** which tightens against washer **223**.

In considering the core shell and its method of formation, reference is had to FIG. 8 which shows sheet metal stock **23** which may be slotted at **24** in distended or flattened condition, the slots having such angularity that when the sheet is cylindrically rolled, the slots will have helical pitch as illustrated in FIG. 1. Broken lines **25** are indicative of end flange widths **26** of the sheet into which the slot terminals extend. The shell is cylindrically formed by rolling the slotted sheet and deflecting its ends to form the flanges **26** as they appear in FIG. 1, the flange-forming deflection of the metal being illustrated in FIG. 9. After the shell is thus rolled and flanged, the ends of the space **27** between opposed edges of the metal are suitably closed as by welded strips **28**, see FIGS. 2 and 7.

In the manufacture of larger diameter cores it may be more advantageous to make the shells preformed sections and joining them together to cylindrical form. Thus as illustrated in FIG. 1A instead of forming the shell of a single sheet as described with reference to FIG. 1, I may construct the shell of preformed sections **23***a* each having two or more brush strip receiving slots **24***a* with flanged terminals **26***a*, the sections being joined together along overlapping edges as by bolts or rivets **23***b*. The segments **23***a* may be initially formed and joined in the flat and thereafter rolled to the cylindrical shape of the shell, or the segments may initially be rolled as cylindrical segments and then joined together as indicated.

After formation of the shell, brush strips, generally indicated at **30** are inserted into the slots **24**, each strip comprising an elongated metallic bristle holder **31** of generally omega shape within which is received the doubled ends of the brush bristles **32** which are retained in a usual manner by wire **33** about which the bristles are doubled. Each holder has lateral flanges **34** which are welded to the outer surfaces of the shell **23**. It will be observed in reference to FIG. 4 that the brush strip holders **31** extend into the ends of the slots **24** within the flange bends, thus affording maximum brush or brush strip length in relation to the axial dimension of the shell.

The described shell and brush strip assembly constitutes a brush structure for disposal as against reuse, after the bristles have become worn, such disposability being both practical and economical as compared with for example replacement of brush strips in a retained core, by reason of low manufacturing and assembly costs made possible by the simple sheet metal core configurations and the ease of accommodating the brush strips within the core.

The shell **23** is supported at both ends from the shaft **11** by way of the pair of inerts **18** and **18***a* which comprise inner plate structures **36** and **36***a* welded to outer cavitated plates **37** and **37***a* peripherally bearing against the shell flanges **26**, the plates being centrally apertured at **38** to pass the shaft **11**. As illustrated in FIG. 6, plates **36** and **36***a* have uniformly circularly spaced flange segments forming resilient tongues **39** which may correspond in number to twice the number of brush strips. These tongues angle outwardly to an edge diameter such that when thrust into the end of the shell **23**, the tongues will deflect inwardly and their abrupt or sharp edges frictionally engage the inner surface of the shell. As shown in FIG. 7, alternate spaces **40** between the tongues receive the ends of the brush strip holders **31** so that rotating drive by the plates **36** and **36***a* is transmitted to the disposable broom structuer by engagement of the tongues **39** against both the brush strip holders and the inner surface of the shell **23**.

Referring to FIG. 7, the cavitated plate **37** is polygonally recessed, e.g., hexagonaly, (as may also be plate **37***a*) to present about its central area **42** inwardly deflected planar portions **43** for releasable driving engagement by the driving head **17**. At this point it may be mentioned that plates **36**, **36***a* and **37**, **37***a* all may be formed simply and economically as sheet metal stampings.

The illustrated type of end drive for the shell is more particularly dealt with in co-pending application Serial No. 430,317 filed February 4, 1965 and assigned to the assignee of the present application. For present purposes it will suffice to describe the driving head **17** as comprising a cavitated plate **44** welded at **45** to the shaft **11**. The cavitated shape of plate **44** corresponds to the shape of plate **37** as previously described with reference to FIG. 7, so that when brought together the angular portions **47** of plate **44** bear flatly against the corresponding deflections **43** of plate **37** thus to transmit the rotative head drive and brush support by simple surface interengagement of the parts.

Thus under use conditions the driving head **17** is interengaged with the insert assemblies **18** as shown in FIG. 4. When worn, the shell and bristle assembly constituting the brush proper, may be dismounted by first removing bearing **22** from sleeve **20** and withdrawing the sleeve and attached plates **36***a* and **37***a* from the shaft, thus freeing the shell **23** to be withdrawn from plate **36** remaining on the shaft, and from the shaft. A replacement brush is then mountable by a reverse sequence of the simple operations.

I claim:

1. A disposable essentialy cylindrical sweeper broom structure comprising a sheet metal cylindrical shell having outwardly radial end flanges as integral continuances of the shell metal, circularly spaced slots through the shell and extending continuously essentially longitudinally thereof the distance between said end flanges, and brush strips comprising elongated channel retainers received within said slots and terminating at the end flanges, said channels, being secured to the shell and containing bristles projecting outwardly therefrom.

2. The structure of claim **1**, in which the cylindrical shell consits of separately formed interconnected arcuate sections, each containing two or more brush strips.

3. The structure of claim **1**, in which the slots have helical angularities.

4. The structure of claim **1**, in which said slots extend into the end flanges.

5. The structure of claim **1**, in which the strip channels have flanges welded to the shell.

6. The structuer of claim **1**, together with shell rotating drive means received within the ends of the shell.

7. The structure of claim **6**, in which said drive means are removably received within the shell and rotatively bear against the strip channels.

8. The structure of claim **7**, in which said driving means also bears frictionaly against the shell.

9. The structure of claim **6**, in which said driving means comprise circular plates peripherally recessed to receive the strip channels.

10. The structure of claim **9**, in which the plate perpheries between the recesses are angularly deflected to resiliently bear against the inside of the shell.

11. The structure of claim **10**, including outer plates secured to the first mentioned plates and bearing against the ends of the shell.

12. The structure of claim **11**, in which said outer plates are centrally cavitated with flattened faces for engagement by correspondingly flattened faces of driving means.

References Cited

UNITED STATES PATENTS

968,820	8/1910	Vardell	15—183 X
2,653,340	9/1953	Cave	15—183 X
3,036,323	5/1962	Nelson	15—183

FOREIGN PATENTS

736,323	9/1955	Great Britain.

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