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(54) Corner broom

(57) A brush head includes a frame and an assembly of brush sections connected thereto. The assembly of brush sections includes first and second wing brushes and a central brush therebetween. The first wing brush is pivotally interconnected to the frame at a first hinge, and the second wing brush is pivotally interconnected to the frame at a second hinge. The wing brushes move from a first, rest orientation, angled with one another when at rest or lightly loaded; to a second, load orientation, parallel and colinear with one another when loaded.

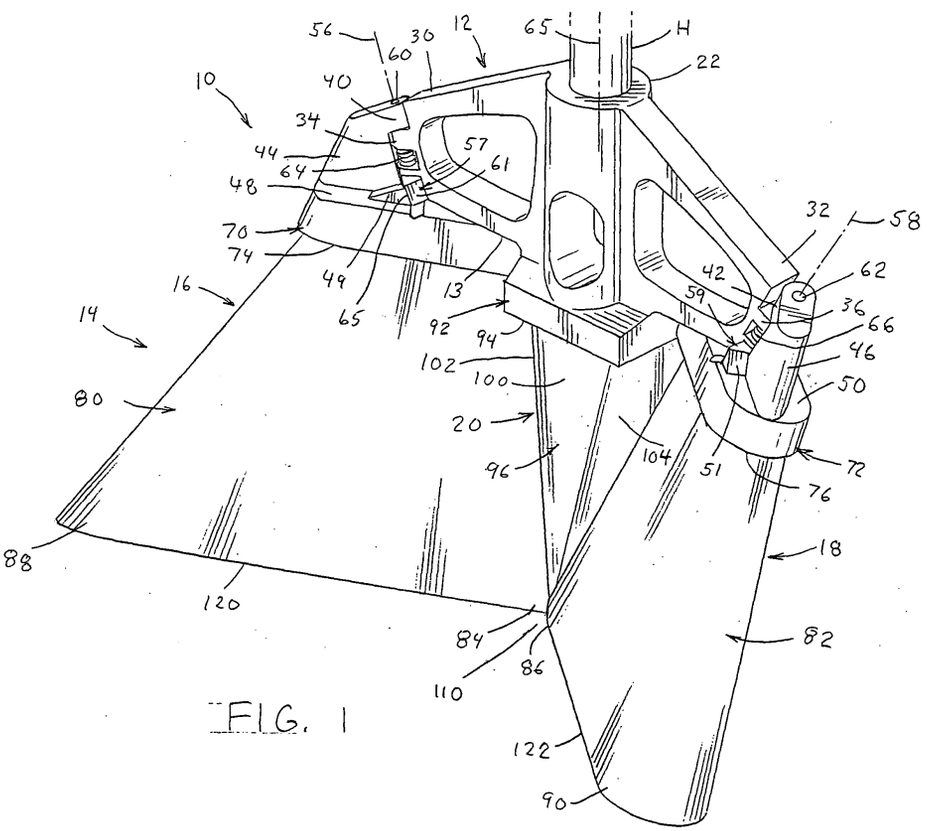

FIG. 1

EP 1 576 902 A2

Description

[0001] The subject invention relates to the art of sweeping or brushing and, more particularly, to a brush head or broom attachment of this character adapted to effectively clean floor and counter surfaces, along with associated corners.

BACKGROUND OF THE INVENTION

[0002] This invention relates to the brushing or cleaning of corner areas and contiguous accessible surfaces or open areas. More specifically, this invention pertains to an articulating brush head having structural cleaning features not heretofore disclosed in the brushing and cleaning art.

[0003] Existing devices consist of brooms or broom attachments of various kinds, shapes, and sizes, some of which include angled and/or tapered brush heads or bristles. The known brooms include a brush head(s) in a fixed orientation to the handle whereby cleaning effectiveness is compromised in one or more of the following situations: cleaning corners, cleaning open areas, moving dirt onto a dustpan, changing from open floor or surface cleaning to corner cleaning, etc. These known structures do not permit the cleaning features of the subject broom invention.

SUMMARY OF THE INVENTION

[0004] In accordance with the present invention, a brush head device for cleaning corner areas and open areas of a floor is provided that avoids or minimizes the problems and difficulties encountered with the use of devices of the foregoing character. More particularly in this respect, a brush head is provided which includes a frame and an assembly of brush sections. The assembly of brush sections includes first and second wing brushes and a central brush therebetween. The first wing brush is pivotally interconnected to the frame at a first hinge. The second wing brush is pivotally interconnected to the frame at a second hinge.

[0005] In accordance with another aspect of the invention, a brush head is provided including a frame. The frame includes a fixed central brush with first and second wing brushes hingedly connected to the frame on opposing sides of the central brush.

[0006] In accordance with yet another aspect of the invention, a brush head device is provided including a frame having a first wing brush with a hinge and a second wing brush with a hinge. The wing brushes are hingedly connected on opposing ends of the frame. The hinges are spring biased from a load position to a rest position. The wing brushes are at an inwardly extending angle relative to the frame when the brush head is at the rest position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The foregoing objects, and others, will in part be obvious and in part more fully pointed out hereinafter in conjunction with a written description of the embodiments of the invention illustrated in the accompanying drawings in which:

[0008] FIGURE 1 is an interior top perspective view of a brush head in a rest position according to a first embodiment;

[0009] FIGURE 2 is an interior elevational view of a brush head in the rest position according to a first embodiment;

[0010] FIGURE 3 is an interior top perspective view of the brush head in a load position according to the first embodiment;

[0011] FIGURE 4 is an exterior top perspective view of the brush head in the rest position according to the first embodiment;

[0012] FIGURE 5 is an exterior [top perspective] elevational view of a brush head in the load position according to a second embodiment;

[0013] FIGURE 6 is an exterior elevational view of the brush head of FIGURE 5 in the rest position;

[0014] FIGURE 7 is an exterior top perspective view of a brush head and a handle according to a third embodiment;

[0015] FIGURE 8 is an exterior topside front perspective view of the brush head of FIGURE 7; and,

[0016] FIGURE 9 is an interior side perspective view of the brush head of FIGURE 7.

DETAILED DESCRIPTION

[0017] Referring now in greater detail to the drawings, in which the showings are for the purpose of illustrating embodiments of the invention only, and not for the purpose of limiting the invention, FIGURES 1-4 of the drawings illustrate a brush head or broom attachment 10 device. The brush head 10 includes a frame 12 and an assembly of brush sections 14. The weight of the brush sections 14 is carried by the frame 12. The brush sections 14 include a pair of articulating wing brushes 16, 18 and a fixed or central brush 20 therebetween. The frame 12 includes a collar 22 adapted to receive a handle H (FIGURE 1) at its center. The frame 12 further includes opposing ends 30, 32 spaced from the center. The handle H can be any variety of handle (i.e. rigid, telescoping, retractable, etc.) adapted to be mounted to the broom attachment 10. The opposing ends 30, 32 of the frame 12 each include loop or eye portions 34, 36. The wing brush portions 16, 18 have upper surfaces 48, 50. Wing brush loop or eye portions, 40, 42 are positioned on arms 44, 46 on the wing brush portion upper surfaces 48, 50. The loop or eye portions 34, 36 of the frame 12 are aligned with corresponding loop or eye portions 40, 42 of respective arms 44, 46 into substantially continuous, coaxial alignment. The aligned loop or eye

portions 34, 40 and 36, 42 define pivot hinges with a hinge pin 60, 62 passing thru the loop or eye portions. A biasing spring 64, 66 is positioned around each hinge pin 60, 62 and engages the frame 12 and the wing brush arms 44, 46. The hinge pins 60, 62 and the biasing springs 64, 66 urge the wing brushes 16, 18 into a first or (rest) position (figures 1, 2, and 4) but allow the wing brushes to move to a second or (load) position (figure 3) as described in more detail hereinafter. The hinge pins 60, 62 are not parallel to the handle H. Each hinge pin 60, 62 is aligned and coincident with a pivot axis 56, 58.

[0018] The pivot axes 56, 58 of the wing brushes 16, 18 are spaced from, and oblique to, a vertical or symmetrical axis 65 extending through the center of the frame 12 and coincident with the handle H. Each of the pivot axes 56, 58 can form an angle of about thirty degrees with the symmetrical axis 65. This angle may be modified to accommodate different structures achieving the same end result.

[0019] The wing brushes 16, 18 each include a stock or back 70, 72 having an underside 74, 76 with a multiplicity of bristles 80, 82 extending therefrom. As shown in the drawings, the wing brush bristles 80, 82 extend downward and project outward from the underside 74, 76 of the wing brush stocks 70, 72. The wing brush bristles 80, 82 each have an inner region of bristles 84, 86 and an outer region or leading edge of bristles 88, 90.

[0020] The fixed central brush 20 is mounted on an underside 13 of the frame 12 and can be centered about the symmetrical axis 65 of the brush head 10. The central brush 20 includes a brush stock 92 having an underside 94 with a multiplicity of bristles 96 extending therefrom. The central brush bristles 96 extend downward from the underside 94 of the central brush stock 92. The central brush 20 includes an inner region of bristles 100 and opposing outer regions of bristles 102, 104. With reference to a first embodiment as shown in Figure 3, the length of the bristles on an edge 106 of the central brush facing the observer can be slightly shorter than the bristles in the wing brushes 16, 18. The length of the bristles 96 in the central brush can increase linearly from the edge 106 facing the viewer in Figure 3 to an edge 108 remote from the viewer. At the remote edge 108, the bristles of the central brush 20 can be equal in length to the bristles in the two wing brushes 16, 18. This results in the advantageous configurations shown in Figures 1, 2 and 4.

[0021] Referring to Figure 1, the brush head 10 is seen as in the rest position as a user would see it while extending it into a corner. The handle H can extend outwardly and downwardly relative to the user (i.e. offset from vertical). The wing brushes 16, 18 can form an angle, in the plane of the floor (not perpendicular to the handle H) of about ninety degrees. The terminal or free ends 120, 122 of the wing brush bristles 80, 82 can be in a substantially horizontal plane. The terminal ends of the bristles 96 of the central brush or a portion thereof, are also in a substantially horizontal plane and abut the bristles of the wing brushes 16, 18. In this state, the brush head 10 is configured for reaching into a standard, right angle corner for cleaning dust and debris from a corner of a floor.

[0022] According to the first embodiment, as best shown in Figures 1 and 2, the bristles 80, 82 of the wing brushes 16, 18 project downwardly and outwardly. Thus, the bristles at the leading edges 88, 90 are inclined forwardly from the wing brush stocks 70, 72 when the wing brushes 16, 18 are in the rest position. This provides for an intermingling and overlapping of the inner region 84, 86 of wing brush bristles 80, 82 with the outer regions 102, 104 of central brush bristles 96. This is of particular advantage in that dirt, lint, waste, or the like, will be prevented from passing beneath or between the bristles 80, 82, 96 in the sweeping operation.

[0023] Additionally, the inner regions 84, 86 of the wing brush bristles 80, 82 overlap and intermingle with each other and with the outer regions 102, 104 of the central brush bristles 96, thereby forming closures at opposing sides of the central brush proximal to the symmetrical axis 65, when the brush head 10 is in the second or load position. In the load position the brush sections 14 can be aligned. The bristles of the wing brushes 16, 18 and the central brush 20 overlap in the rest state, the load state, and while the brush head 10 moves from one state to the other. Therefore, dust swept from a corner will- be held as the brush head is loaded and the handle H brought to a more vertical orientation, which moves the brush head 10 to the load configuration.

[0024] Referring now to FIGURES 3 and 4, each wing brush 16, 18 includes an upper surface 48, 50 having an interior tab 49, 51 and an exterior tab 53, 55 mounted along opposing edges of the upper surface 48, 50. A first stop 57, 59 includes an inward protruding arm 61, 63 mounted on the frame 12 and having an angled surface 65, 67 for mating with the interior tab 49, 51 thereby providing a limit to the spring biased rotation of the wing brush 16, 18 at the first position. The first stop 57, 59 prevents further inward rotation thereby providing a predetermined rest angle between the brush sections 14. This angle can be selected to provide a rest angle at the bristle ends relative to the plane of the floor of substantially ninety degrees when the brush head 10 is positioned as seen on Figure 1. The angle of the wing brushes 16, 18 in a plane perpendicular to the handle H is about one hundred four degrees in one embodiment. This angle is not critical. The angle of ninety degrees in the plane of the floor can be achieved with other configurations of the pivot axes 56, 58, the stops 57, 59, the desired angle of the handle H when reaching into a corner and other parameters.

[0025] A second stop 71, 73 includes an outward protruding arm 75, 77 mounted on the frame 12 and having an orthogonal surface 79, 81 for mating with the exterior tab 53, 55 thereby providing a limit to the rotation of the wing brush 16, 18 at the load position. The second stop

71, 73 prevents further outward rotation thereby providing a pre-determined load angle between the brush sections 14. The position of the first 57, 59 and second stops 71, 73 effectively limit the range of rotation of the wing brushes 16, 18 whereby the rest angle and load angle can be fixed. In one embodiment, the load angle can be one hundred eighty degrees with all three brush segments in parallel, colinear alignment.

[0026] As described, the hinges include biasing springs 64, 66 whereby the wing brushes 16, 18 are biased inward when the brush head 10 is in the rest position. Each of the wing brushes 16, 18 move from a biased angled (rest) position to a substantially co-linear (load) position relative to the frame. As best shown in FIGURE 3, when the wing brushes 16, 18 are in the load position, the wing brushes 16, 18 and the central brush 20 are generally in axial alignment and coplanar with the frame 12. In this position, the interior angle is generally 180 degrees between the two wing brushes 16, 18. The angle of rotation of each wing brush 16, 18 can range from about 30 to about 70 degrees from the second position to the first position.

[0027] As described above, the springs 64, 66 bias the wing brushes 16, 18 to the first or rest position. The wing brushes 16, 18 selectively move from this first position (Figure 1) to the second position (Figure 3) upon frictional engagement of free ends 120, 122, with and movement along the floor, counter, or other surface. In this manner, the spring biasing force is overcome by a user when the wing brush sections 16, 18, more specifically, the free ends 120, 122, are sufficiently engaged with and moved across the floor. The downward pressure on the bristle free ends 120, 122 and the accompanying friction causes the wing brushes 16, 18 to rotate from the inclined inward position to the generally axially aligned position relative to the frame 1-2. Upon releasing the downward force and/or disengaging the bristle ends 120, 122 from the floor, the wing brushes 16, 18 bias back to the inclined inward or rest position. Thus, the position of the wing brush sections 16, 18 are controlled by the user allowing the brush head 10 to effectively clean a corner when in the first position and effectively clean an open floor when in the second position.

[0028] It is to be appreciated that the angle of the wing brushes 16, 18 and associated bristles 80, 82, while in the rest position, provide for two advancing points of contact as the brush head 10 is moved towards and over a linear edge of ,for example, a dustpan (not shown). The two points of contact continually advance towards the interior corner 110 as the brush head 10 is moved toward and over the linear edge of the dustpan. This action provides a funneling effect to the dirt being transported onto the dustpan. In particular, the dirt moves from the outer regions of wing 88,90 brush bristles 80, 82 toward the inner region of center brush bristles 100. This can be accomplished by the user maintaining the handle H in an inclined orientation as seen in Figure 1 while drawing the brush head 10 to the dust pan.

[0029] Referring now to FIGURES 5 and 6, a second embodiment of a brush head is therein shown. Like components are identified with like numerals including a primed (') suffix and new components are illustrated by new numerals. The brush head 210 includes a fixed central brush 220 mounted on the underside 13' of the frame 12' and is centered about the symmetrical axis 65' of the brush head 210. The central brush 220 includes a brush stock 92' having an underside 94' with a multiplicity of bristles 226 extending therefrom. The central brush bristles 226 extend downward from the underside 94' of the central brush stock 92'. The central brush 220 includes an inner region of bristles 230 and opposing outer regions of bristles 232, 234. With reference to the second embodiment as best shown in Figure 5, it is to be appreciated that the length of the bristles 226 of the central brush 220 can be slightly longer at both edges 236, 238 than the bristles 80', 82' in the wing brushes 16', 18'. This provides for an intermingling of the wing brush bristles 80', 82' with the central brush bristles 226. Accordingly, it is to be appreciated that edge 238 can extend along and into a corner (Figure 6). This is of particular advantage in that dirt, lint, waste, or the like, will be prevented from passing beneath or between the bristles 80', 82', 226 in the sweeping operation.

[0030] Referring now to FIGURES 7-9, a third embodiment of a brush head including a handle is therein shown. Like components are identified with like numerals including a double primed (") suffix and new components are illustrated by new numerals.

[0031] Referring to Figure 7, the brush head 310 is seen as in the rest position as a user would see it while extending it into a corner. An angulated handle 312, mounted to the brush head 310, can include a first upwardly extending section 314, extending upwardly from the brush head 310 and a second section 316 extending outwardly generally transverse to the first portion 314.

[0032] It is to be appreciated that the handle 312 can be proportioned for single hand use as best shown in Figure 9. The brush head 310 includes a central axis 65". The handle 312 can be rotatably connected to the frame 12" whereby, the handle 312 can rotate about axis 65".

[0033] The rotation of the handle 312 allows for the brush head 310 to be pulled or pushed from any angle with respect to the handle 312 and brush head 310. As shown in FIGURES 7-9, the handle 312 can be particularly adapted for cleaning counter top surfaces or other confined areas. It is to be appreciated that the brush head 310 can be used with a full length handle (not illustrated) for floor surface cleaning.

[0034] The terminal or free ends 120", 122", or a portion thereof, of the wing brush bristles 80", 82" can be in a substantially horizontal plane. The terminal ends of the bristles 226" or a portion thereof, of the central brush are also in a substantially horizontal plane and abut the bristles of the wing brushes 16", 18". In this state, the brush head 310 is configured for reaching into a stand-

ard, right angle corner (figure 9) for cleaning dust and debris from a corner of a counter, shelf, or floor.

[0035] The exemplary embodiments have been described with reference to the specific embodiments obviously, modifications and alterations will occur to others upon reading and understanding the preceding detailed description. It is intended that the exemplary embodiments be construed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

Claims

1. A brush head comprising:

a frame and an assembly of brush sections connected thereto,
said assembly of brush sections include first and second wing brushes and a central brush therebetween;
said first wing brush pivotally interconnected to said frame at a first hinge; and,
said second wing brush pivotally interconnected to said frame at a second hinge.

2. The brush head of claim 1, wherein said central brush is fixedly connected to said frame.

3. The brush head of claim 1 or 2, wherein at least one of said first wing brush and said second wing brush hinges from a first position to a second position;
said wing brush first position at an angle from about 30 ° to about 70 ° relative to said frame; and,
said wing brush second position co-planar with said frame.

4. The brush head of any of claims 1 to 3, wherein said central brush co-planar with said frame.

5. The brush head of any of claims 1 to 4, wherein said frame includes a collar adapted to receive a handle.

6. The brush head of any of claims 1 to 5, wherein said first hinge and said second hinge are distal to said central brush.

7. The brush head of any of claims 1 to 6, wherein said first wing brush and said second wing brush are spring biased from a load position to a rest position.

8. The brush head of claim 7, wherein said first wing brush and said second wing brush are oriented at an angle from about 30 ° to about 70 ° relative to said frame when said brush head is in said rest position.

9. The brush head of claim 7 or 8, wherein said first wing brush, said second wing brush, and said central brush are co-planar when said brush head is in said load position.

10. A brush head attachment comprising:

a frame, said frame having a fixed central brush; and,
a first and a second wing brush hingedly connected to said frame on opposing sides of said central brush.

11. The brush head attachment of claim 10, wherein said central brush including inwardly directed bristles.

12. The brush head attachment of claim 10 or 11, wherein said first wing brush and said second wing brush include outwardly directed bristles.

13. The brush head attachment of claim 10 or 11, wherein said first wing brush and said second wing brush include outwardly directed bristles whereby said inwardly directed bristles of said central brush intermingle with adjacent said outwardly directed bristles of said first and said second wing brushes.

14. The brush head attachment of claim 12 or 13, wherein said outwardly directed bristles being of a first length; and,
said inwardly directed bristles being of a second length;

15. The brush head attachment of claim 14, wherein said first length greater than second length.

16. The brush head attachment of claim 14, wherein said first length less than said second length.

17. The brush head attachment of any of claims 10 to 16, wherein said first and said second wing brushes hingedly connected at opposing ends of said frame whereby said wing brushes rotate from an inwardly extending angle to a linear orientation relative to said frame.

18. A brush head comprising:

a frame;
a first wing brush having a hinge and a second wing brush having a hinge, said first and said second wing brushes hingedly connected on opposing ends of said frame;
said hinges being spring biased from a load position to a rest position; and,
said wing brushes at an inwardly extending angle relative to said frame when said brush head is at said rest position.

19. The brush head of claim 18, further including a central brush, said central brush fixedly connected to said frame between said first wing brush and said second wing brush.

20. The brush head of claim 18 or 19,wherein each said spring biased hinge includes a first stop, whereby said first stop limits inward rotation of said wing brushes when said brush head is at said rest position.

21. The brush head of any of claims 18 to 20, wherein said wing brushes are co-planar relative to said frame when said brush head is at said load position.

22. The brush head of any of claims 18 to 21, wherein each said spring biased hinge includes a second stop, whereby said second stop limits outward rotation of said wing brushes when said brush head is at said load position.

23. The brush head of any of claims 18 to 22,wherein said wing brushes include bristles extending therefrom, said wing brushes articulate from said rest position to said load position when a downward force is applied to said wing brush bristles and said wing brush bristles are frictionally engaged with and moved across a floor.

24. The brush head of any of claims 18 to 23, further including a handle, said handle rotatably connected to said frame.

25. The brush head of claim 24, wherein said frame includes a central axis, said handle rotatable about said axis.

26. The brush head of claim 24 or 25, wherein said handle is angulated including a first upwardly extending section and a second outwardly extending section.

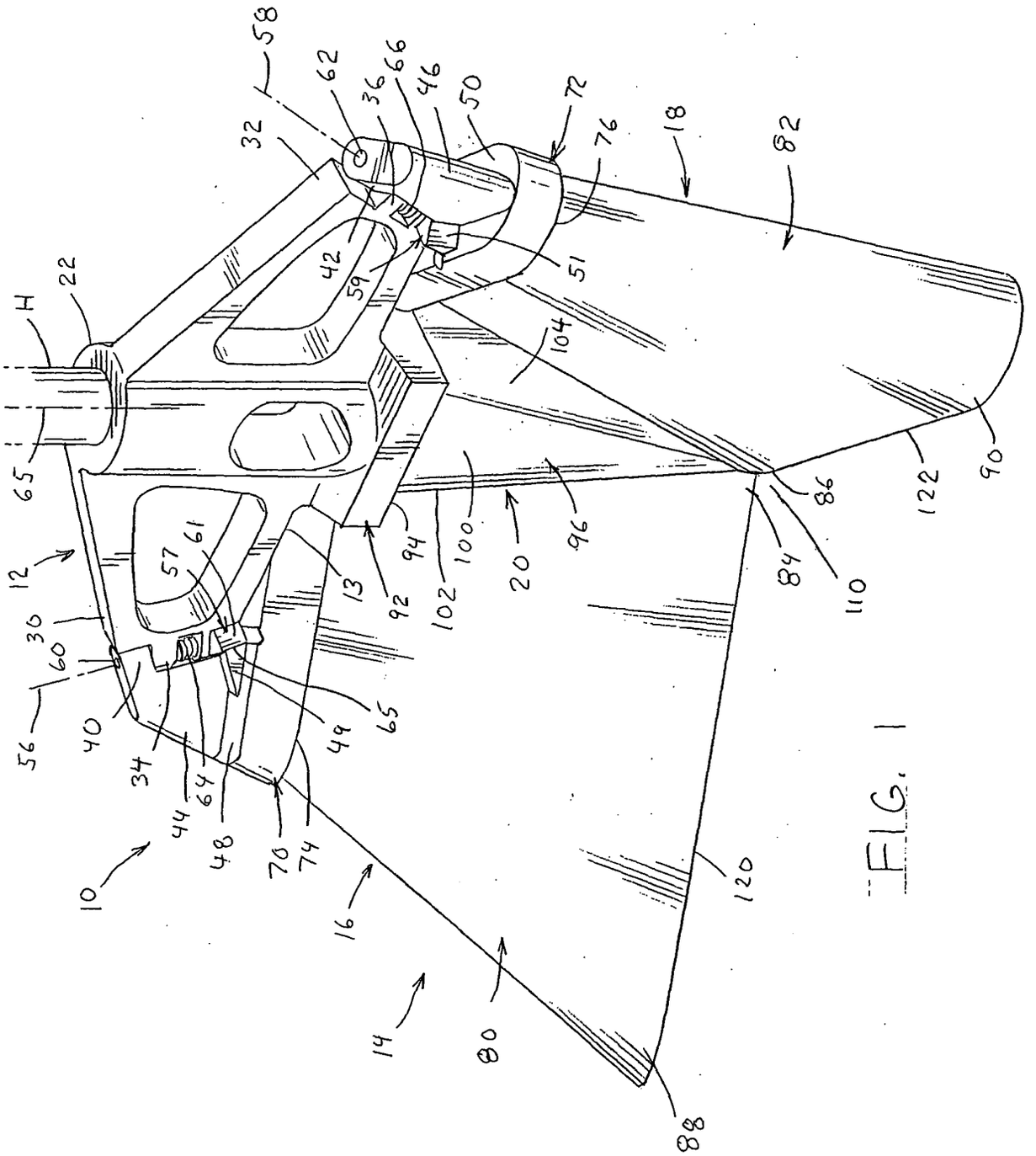
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FIG. 1

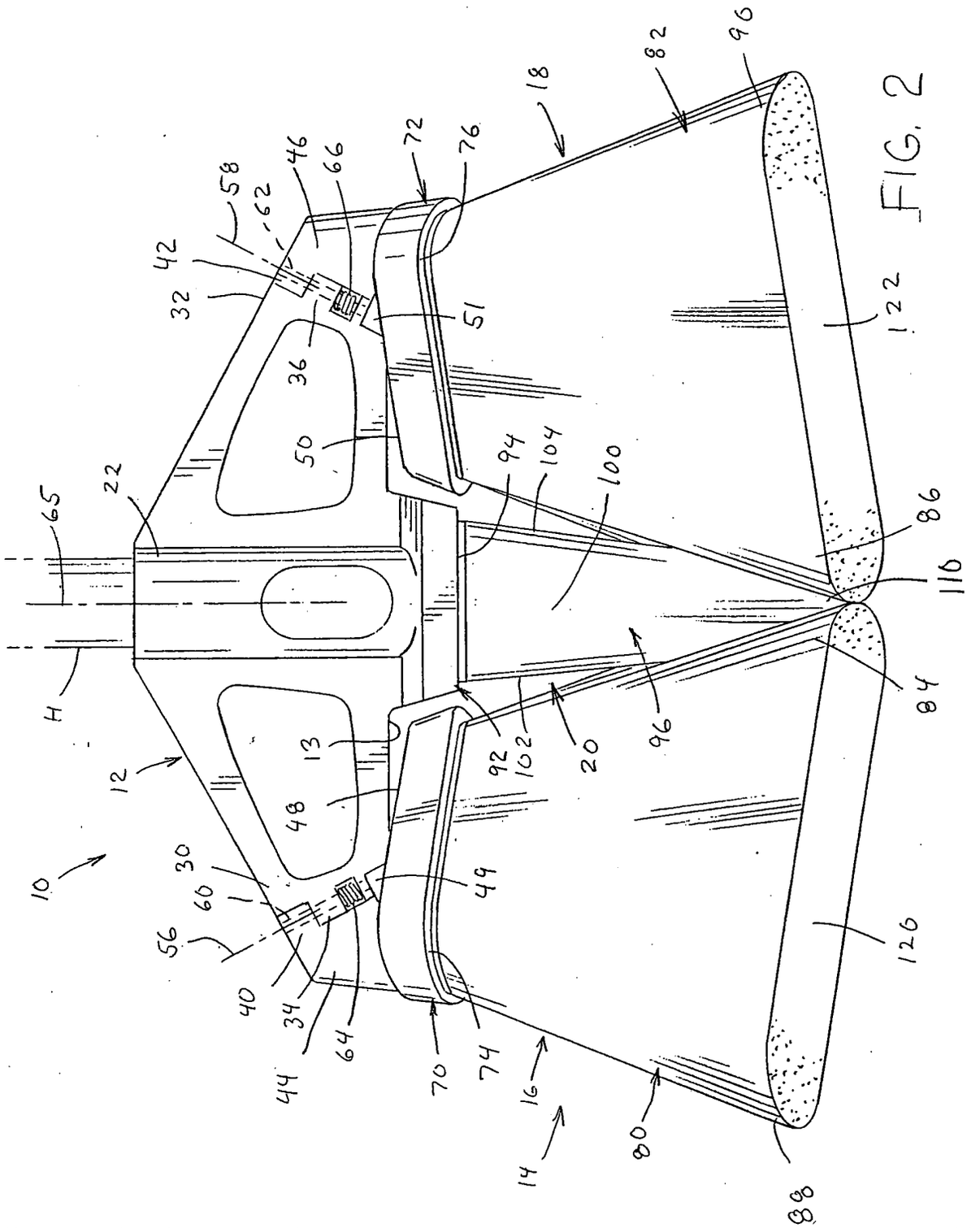
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FIG. 2

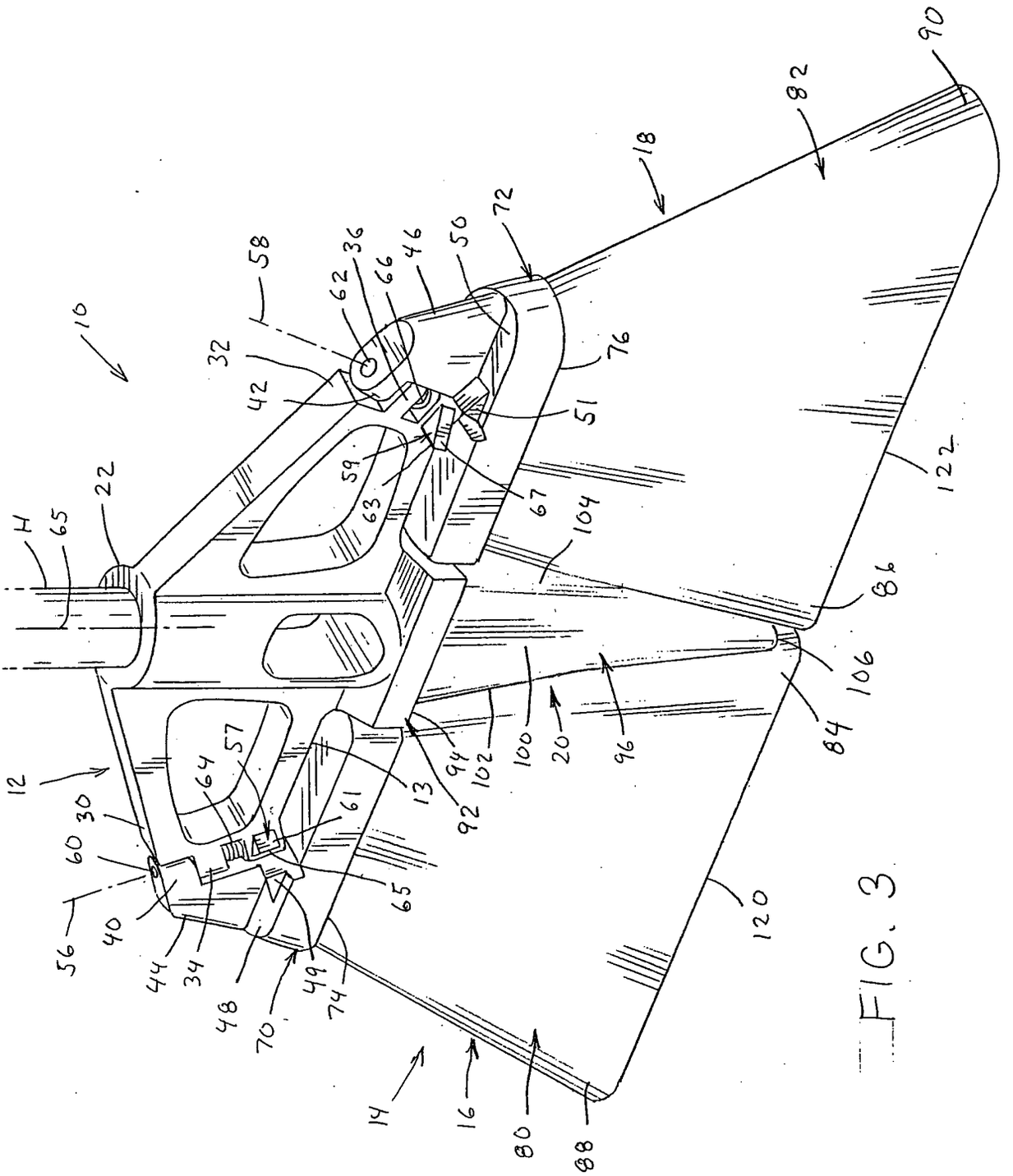
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FIG. 3

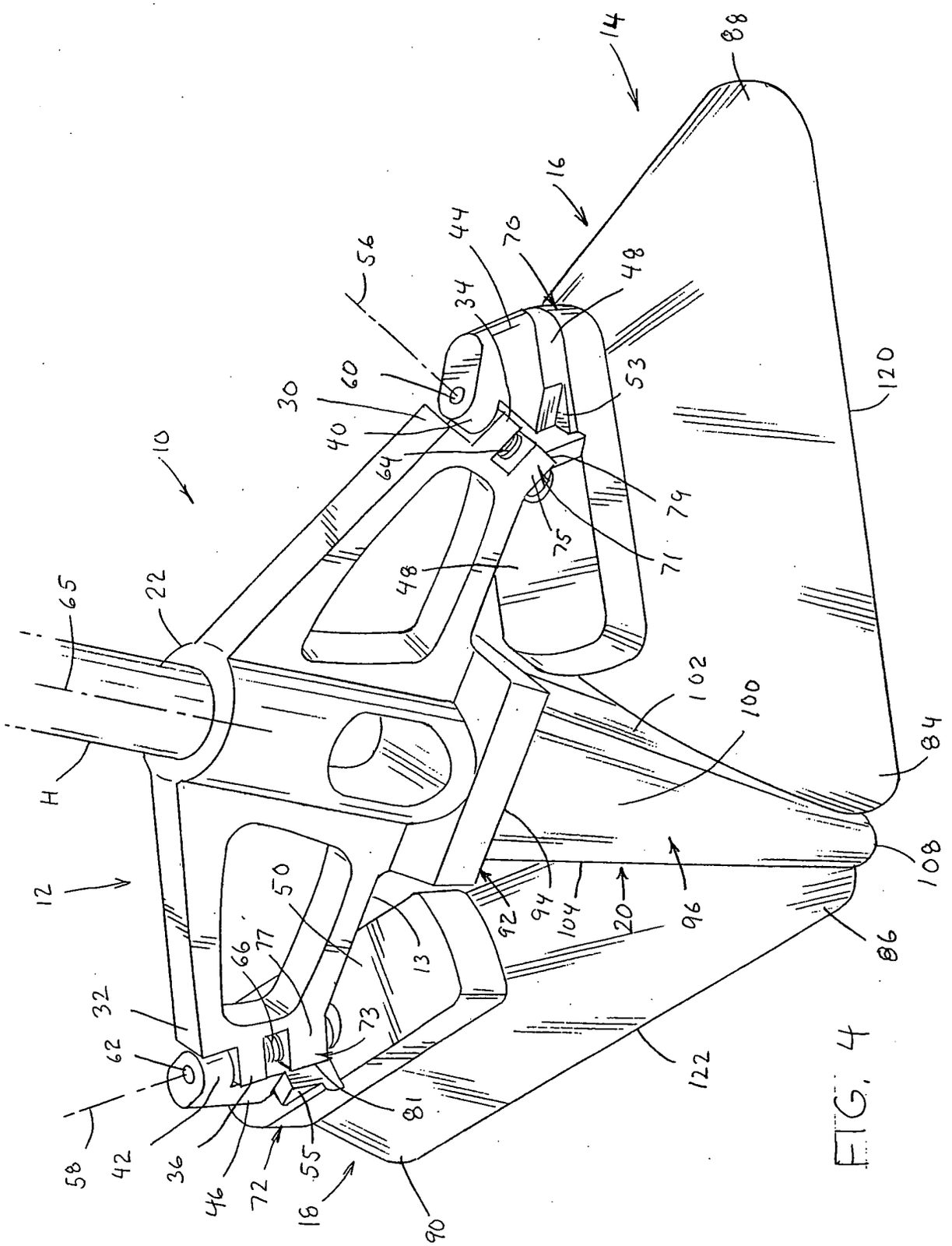
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FIG. 4

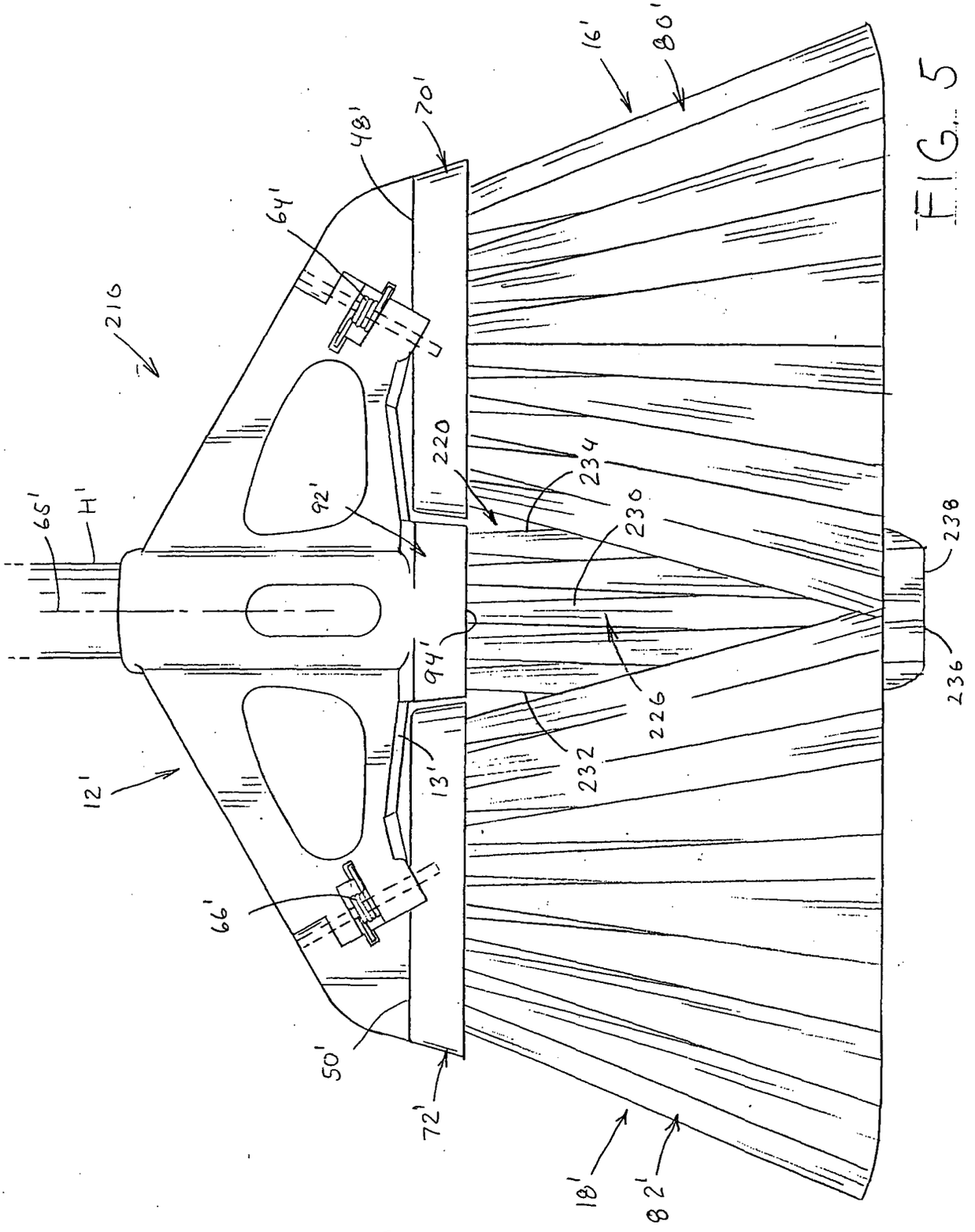
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FIG. 5

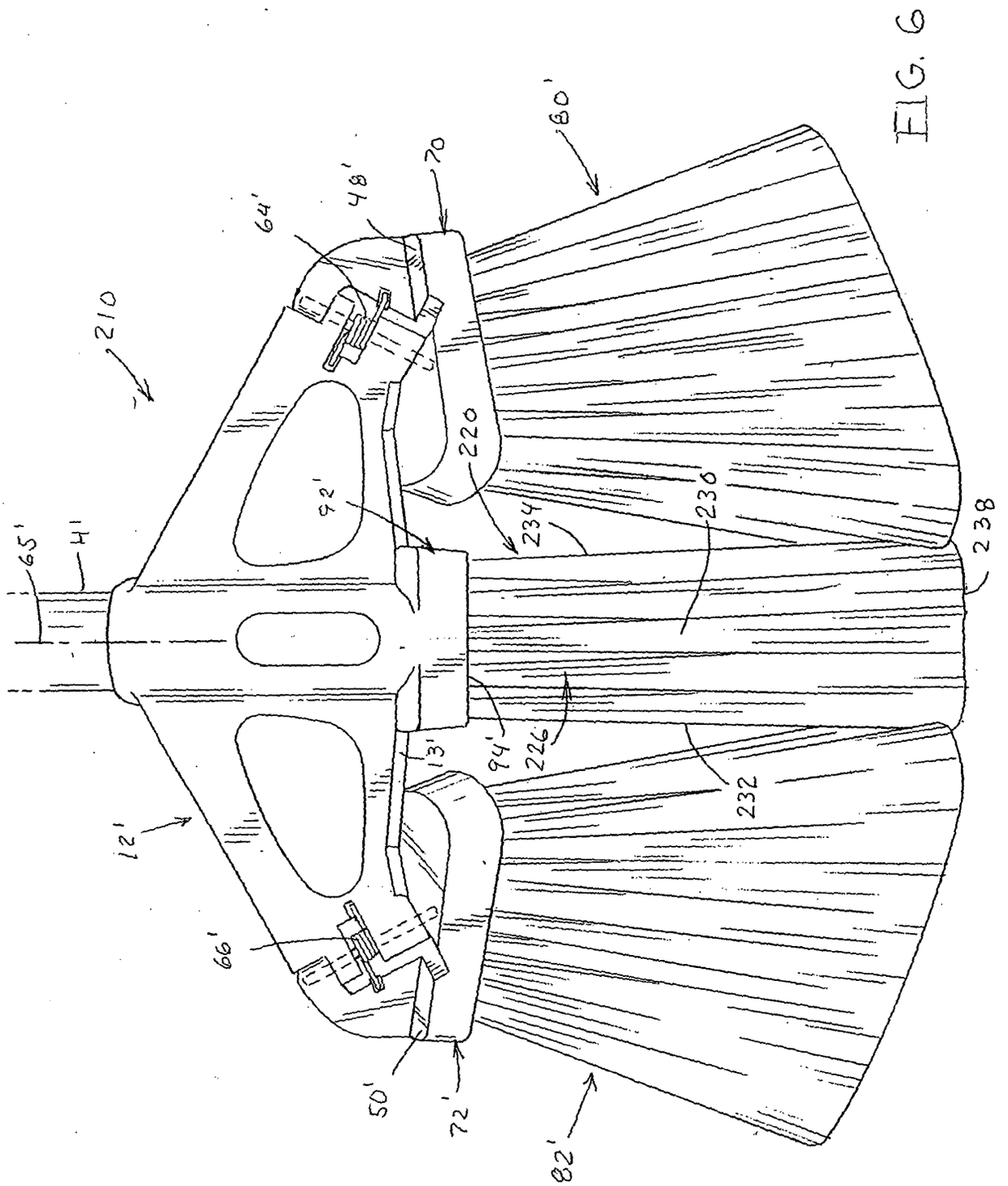

FIG. 6

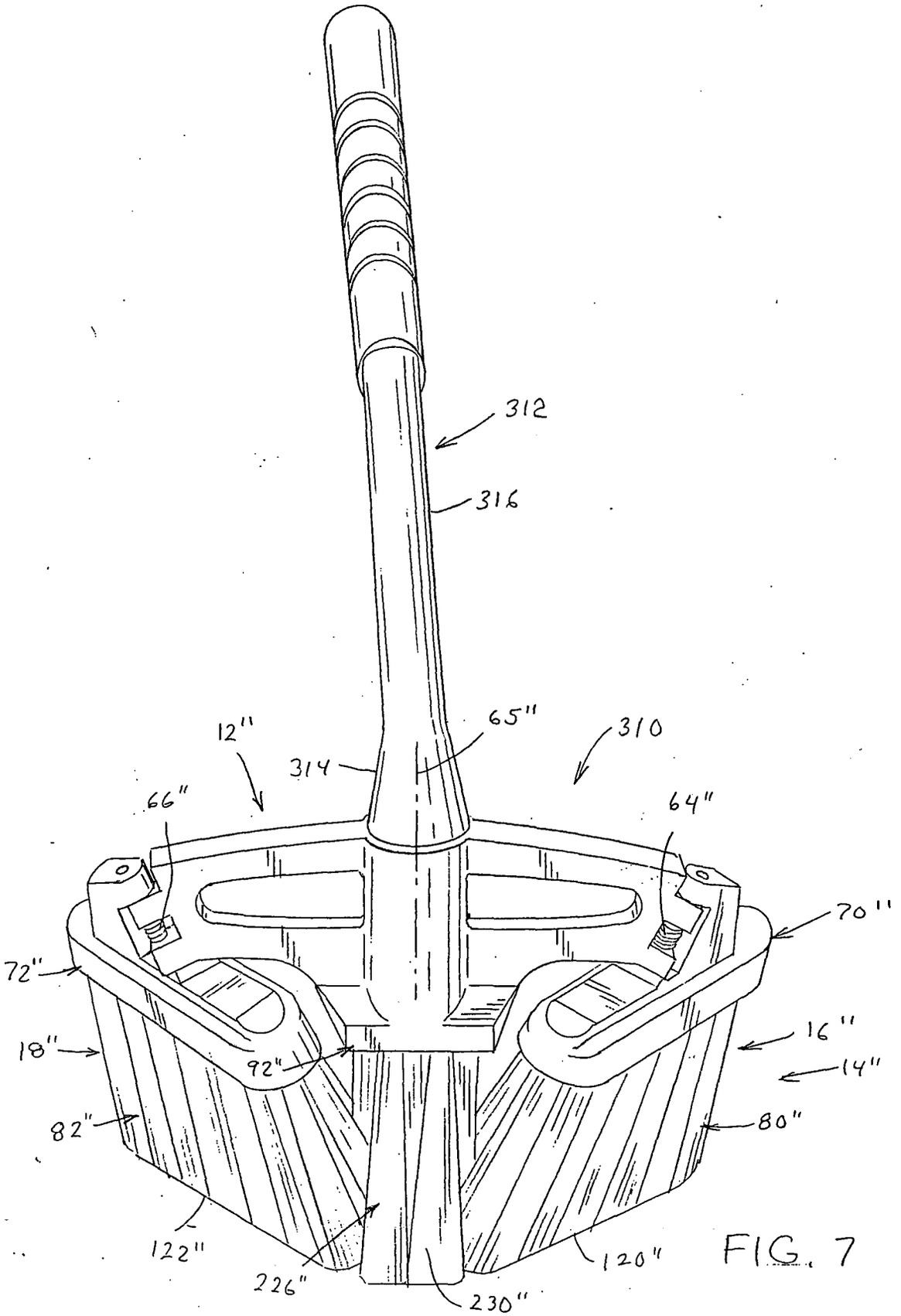

FIG. 7

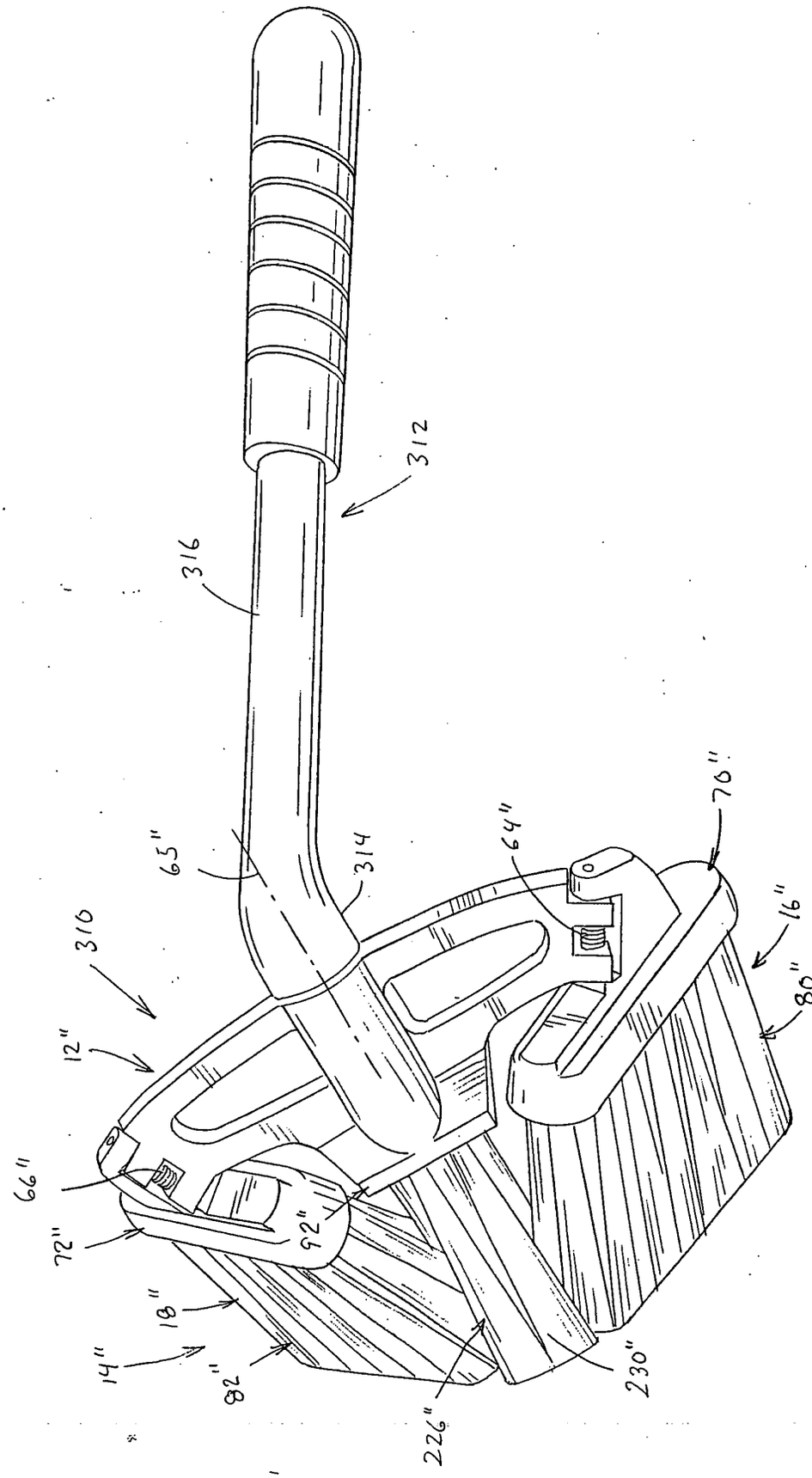

FIG. 8

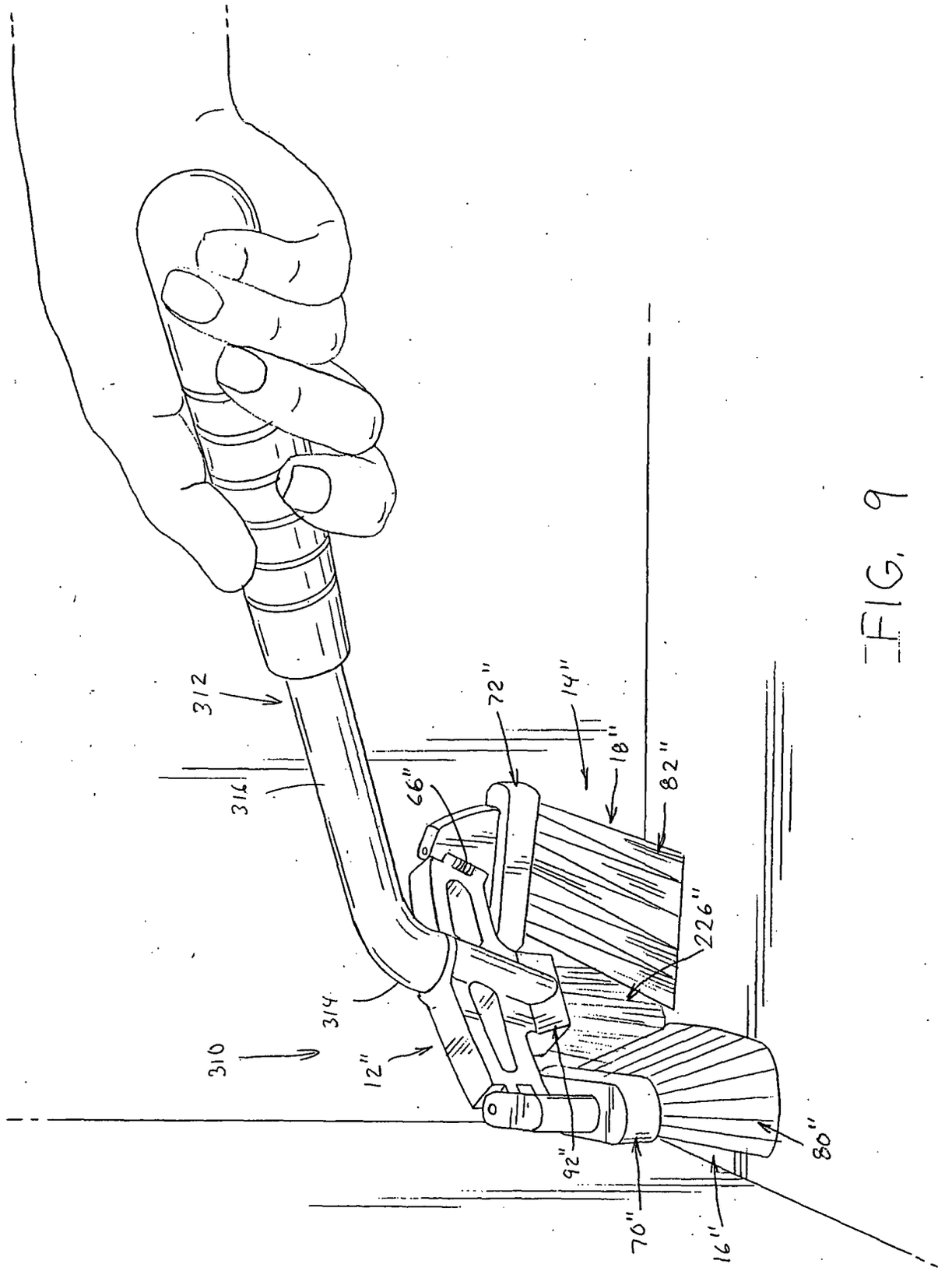

FIG. 9