

[54] **FOAM GENERATING FLOOR
CLEANSING DEVICE**

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[51] Int. Cl. **A47I 13/12**

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401/21-23; 239/142, 214, 329, 331, 332, 380, 343;
259/DIG. 36; 159/DIG. 4; 252/359 E; 222/173;
261/DIG. 26

[56]

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3,121,896 2/1964 Allen et al.....15/50 R

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184,942 1/1937 Switzerland.....15/50 C

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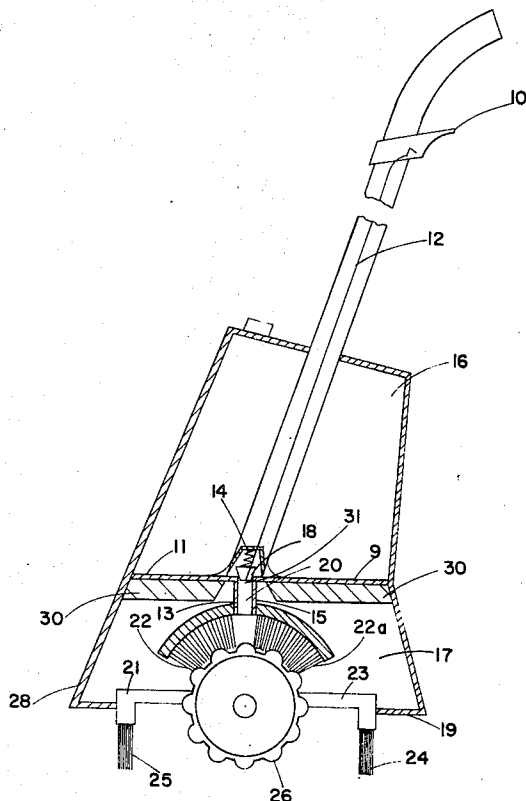
Attorney—Anthony D. Cennamo

[57]

ABSTRACT

A floor covering cleansing device manually or electrically operable of the detergent foam generating type and specifically a corrugated roller in engagement with a brush for generating the foam. The corrugated roller and other brushes are further utilized to work the foam into the floor covering.

8 Claims, 6 Drawing Figures



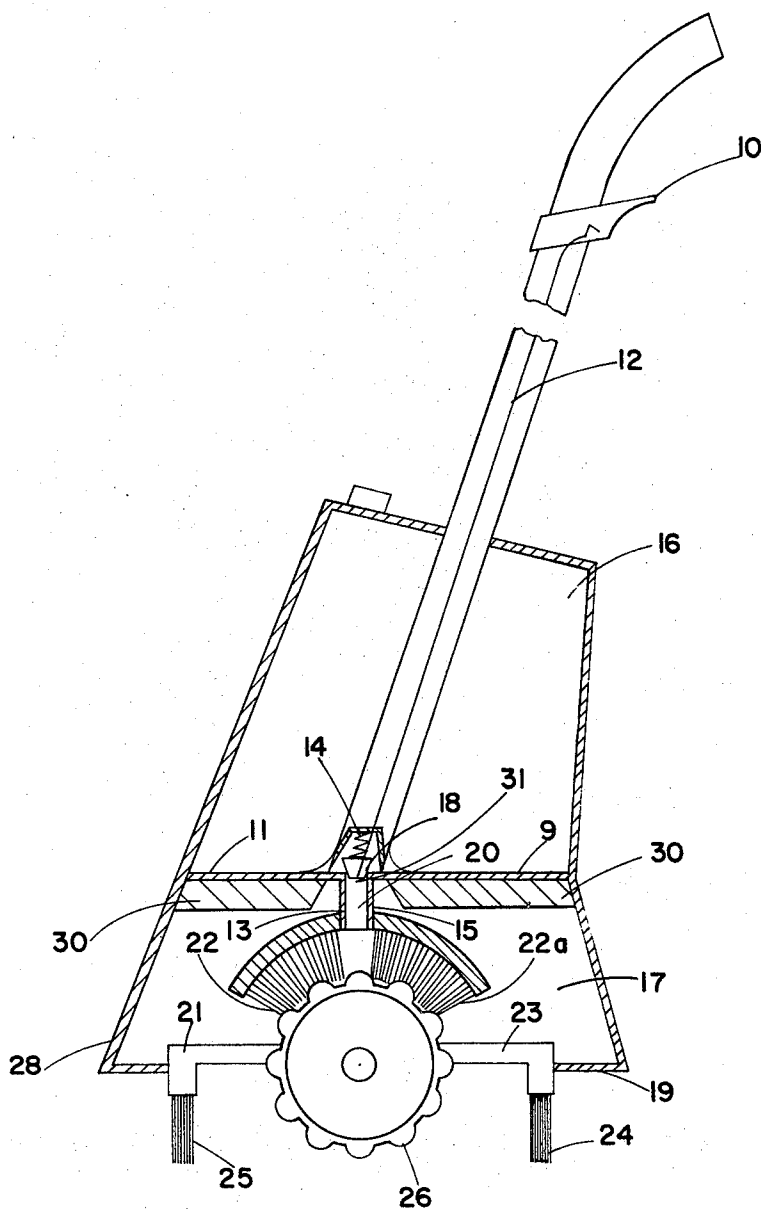


FIG. 1

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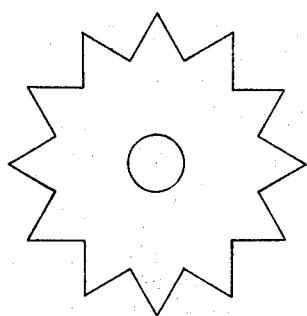


FIG. 5A

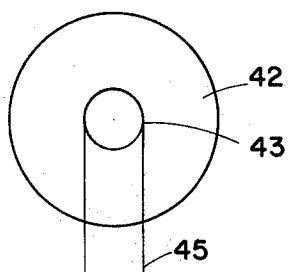


FIG. 5B

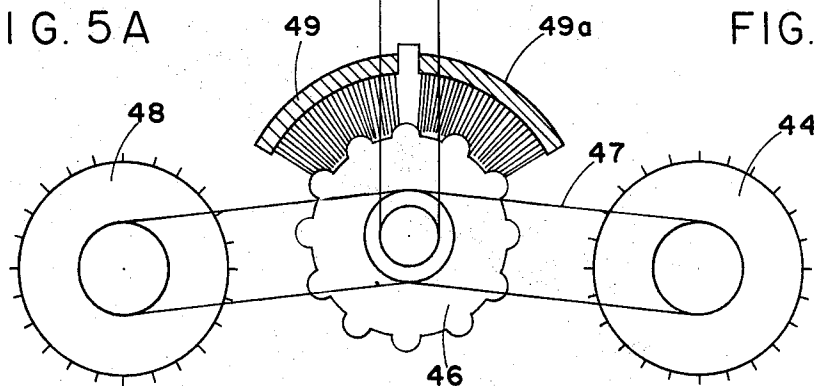


FIG. 4

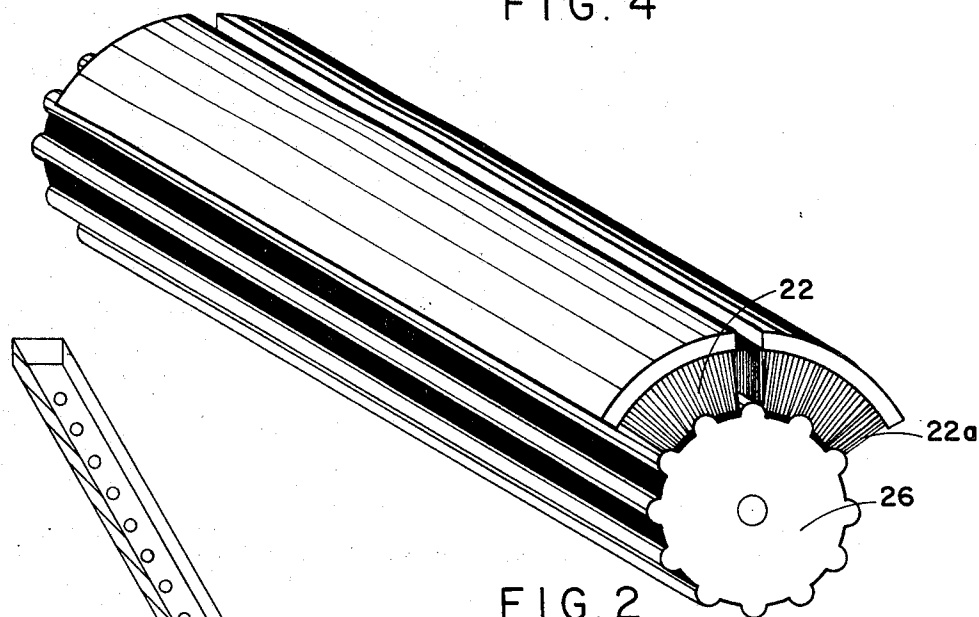
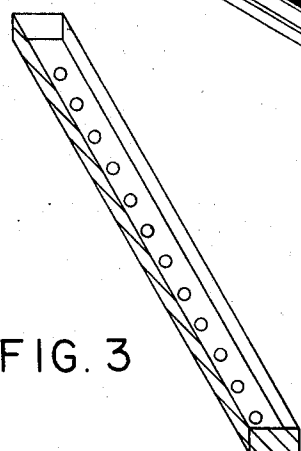


FIG. 2

FIG. 3



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FOAM GENERATING FLOOR CLEANSING DEVICE

BACKGROUND OF THE INVENTION

There are many floor covering cleansing devices available on the market, both the professional type and the home do-it-yourself variety. Basically, the principle of operation of these cleansing devices is to dispense a detergent, liquid or dry, on the floor and to activate the detergent through brush action. More particularly, a typical prior art cleaning device will comprise a tank for storing liquid detergent; the tank having a series of ports, with a hand-operated shutter mechanism, for dispensing the liquid either on a brush, sponge or directly to the floor. The liquid detergent is then converted into suds by the back-and-forth or circular motion of the brushes in contact with the covering.

CROSS REFERENCES

My prior inventions, U.S. Pat. Nos. 3,108,312; 3,114,922; 3,114,927; 3,120,676; 3,178,756; and 3,173,165, are very generally based on the principle of activating the detergent—that is, converting it to suds or foam prior to application to the floor covering. In this manner, the floor covering remains dry, at least comparatively speaking, removing the danger of further shrinkage and rapid subsequent soiling. Also, a uniform application of cleanser is applied with no skill or extra effort. Further since only the detergent that is used is dispensed, a considerable savings in relatively expensive detergent is made. I have found that it is possible to clean as high as twice as much floor covering of the carpeting type, with my invention, than was previously possible.

Other prior art devices are known for generating detergent foam for application to the floor covering. The most widely used of these prior art devices utilizes a hard roller and a sponge type of roller. The sponge type of roller being the means for inserting the air under pressure to the liquid detergent.

Although my prior inventions are very much operable and practical in use, they are somewhat complex for reaching the mass market.

SUMMARY OF THE INVENTION

The present invention is a foam generating floor covering cleansing device. The foam generator includes a corrugated roller with a pair of contour shaped brushes in contact with the corrugations. Between the pair of brushes is disposed means for dispensing liquid detergent uniformly across the length of the brushes—the brushes and corrugated roller being of a length to span the width of the cleansing device. Additionally, other brushes are disposed fore and aft of the corrugated roller for—together with the corrugated roller—working the detergent foam into the floor covering.

OBJECTS OF THE INVENTION

Accordingly, it is a general object of my invention to provide a new and improved floor cleansing device of the foam generating type.

It is a further object of my invention to provide a new foam generator that is rugged, efficient, and extremely simple in operation.

Other objects and features of the present invention will become apparent when taken in conjunction with the drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view cutaway schematic illustration of a preferred embodiment of my invention;

FIG. 2 is an enlarged pictorial view of the roller-brush combination;

FIG. 3 is an enlarged pictorial view of the detergent dispensing means; and

FIG. 4 is a showing of the adaptation of my invention to electrical operation.

FIGS. 5A and 5B show alternative contours of the rollers.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The general concepts of the invention includes a liquid detergent storage tank 16, dispensing means 18, a corrugated roller 26, having brushes 24 and 25 fore and aft, and contoured brushes 22 and 22A in contact with the corrugated roller positioned between the roller 26 and the dispensing means 18.

More specifically, it is known that the conventional scrub brush soaked with liquid detergent, when worked back and forth over a surface, will generate foam. The amount of foam and the degree of rapidity in which it is generated is dependent primarily upon the roughness of the surface together with the work effort. This basic principle is utilized in the present invention; the roughness of the surface being the corrugations on the roller 26 and the work effort being the rotation of the roller 26. In other words, the foam is generated by keeping the brushes stationary and moving a wrought surface over the brushes.

With particular reference to the drawings, the floor cleansing device comprises a housing 28 having an upper section 16 adapted to store liquid detergent. The lower section 17 of the housing 28 is the foam generator. The brushes 24 and 25 and the roller 26 extend beyond the lower section 17 to comprise the scrubbing section.

The foam generator section 17 has fixedly positioned a pair of brushes 22 and 22a. The two brushes are elongated and traverse the entire section 17. The brushes 22 and 22a are maintained in position by the brackets 13 and 15 integrally formed with the bulkheads 9 and 11. The bulkheads 9 and 11 are in turn welded or fused to the housing 28 and form the bottom of the liquid detergent tank 16. The bristle retaining portion of the brushes 22 and 22a are secured in position to the brackets 13 and 15.

In the lower bulkhead 19 a pair of angle brackets 21 and 23 are centrally positioned and secured thereto. The tips of the angle brackets 21 and 23 carrying the brushes 24 and 25. The angle brackets 21 and 23 are spaced sufficiently apart to permit the free rotation therebetween the roller 26.

The brushes 22 and 22a are contoured in a manner that together they form a semicircular brush. The inside diameter of the semicircular brush being that of the outside of the roller 26. The brushes 22 and 22a and the roller 26 are so positioned that the tips of the bristles on the brushes touch the roller between the corrugations. In this way there is forceful contact between the corrugations on the roller 26 and a substantial amount of the ends of the bristles on the brushes 22 and 22a.

With further reference to FIG. 1 and FIGS. 2 and 3, the angle brackets 13 and 15 supporting the brushes 22 and 22a forms a trough 20 centrally positioned and adapted to dispense liquid detergent to the roller-brush combination. The lowermost (bottom) portion of the trough having a series of holes or ports to permit the dropping of the liquid detergent.

In order to control the flow of liquid detergent to the trough 20 and hence to the roller—brushes assembly a stopper or valve 18 is positioned in a port 31 connecting the tank 16 and the trough 20. To introduce liquid detergent to the trough, trigger 10 is activated causing wire 12 affixed thereto to lift the stopper 18. Upon release of the trigger 10 the spring 14 forces stopper 18 to return to its sealing position in port 31.

In operation with the dispensing of the liquid detergent on the roller 26 and its relative movement with the brushes 22 and 22a, the liquid detergent is converted to foam. With continued rotation of the roller 26 the foam is carried to the workpiece—where together with the brushes 24 and 25 the foam is worked into the workpiece. By manual movement of the cleansing device back and forth the roller 26 in contact with the workpiece will rotate in both directions. The direction of movement is immaterial in that the brushes 22 and 22a are disposed on either side of the center line of the roller 26. That is, in that the detergent is dispensed between the brushes 22 and 22a brush 22 will generate the foam with rotation of the roller 16 with movement of the device in the forward direction and roller 22a will generate foam with rotation of the roller 16

with movement of the device in a rearward direction. It can be appreciated, however, that since a certain amount of detergent will be retained by the brushes 22 and 22a foam will be generated by both brushes with movement in either direction.

A commercial adaptation of the present invention is shown in FIG. 4. In this embodiment electrical rotation is imparted to the roller 46 and the rotary brushes 48 and 44. Power is supplied by motor 42, shaft 43 and pulley belts 45 and 47. The principle of operation is similar but with a greater degree of work effort between the corrugated roller 46 and the brushes 49 and 49a.

What is claimed is:

1. A floor cleansing device for applying detergent foam to a workpiece comprising: a housing, a tank for retention of the detergent, a rigid elongated roller having a corrugated surface and being rotatably carried at its two extremities by said housing, an elongated brush, means positioning said brush adjacent said corrugated roller sufficiently close for the tips of said brushes to be in contact with the corrugations on said roller, and communication means opening said tank to said roller.

2. A floor cleansing device as set forth in claim 1 wherein said brush is disposed on either side of said detergent communication means.

3. A floor cleansing device as set forth in claim 1 wherein said brush is semicircular to conform to the contour of said

roller.

4. A floor cleansing device as set forth in claim 1 wherein said communication means comprises a series of openings between said tank and said roller and valve means for opening and closing said openings.

5. A floor cleansing device as set forth in claim 1 wherein said brush positioning means is centrally positioned between said brush and said tank, said positioning means being integrally formed with said tank, said positioning means forming a liquid detergent trough of substantially the same length as said roller, and wherein said communication means between said tank and said roller is formed in the lowermost portion of said trough.

6. A floor cleansing device as set forth in claim 1 wherein said brush is elongated and substantially the same length as said roller.

7. A floor cleansing device as set forth in claim 1 wherein said roller is rotably carried centrally in the lower-most region of said housing, and further including a pair of brushes fore and aft of said roller extending along the axis of said roller.

8. A floor cleansing device as set forth in claim 1 including electrical drive means and means connecting said roller to said electrical drive means for electrically rotating said roller.

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