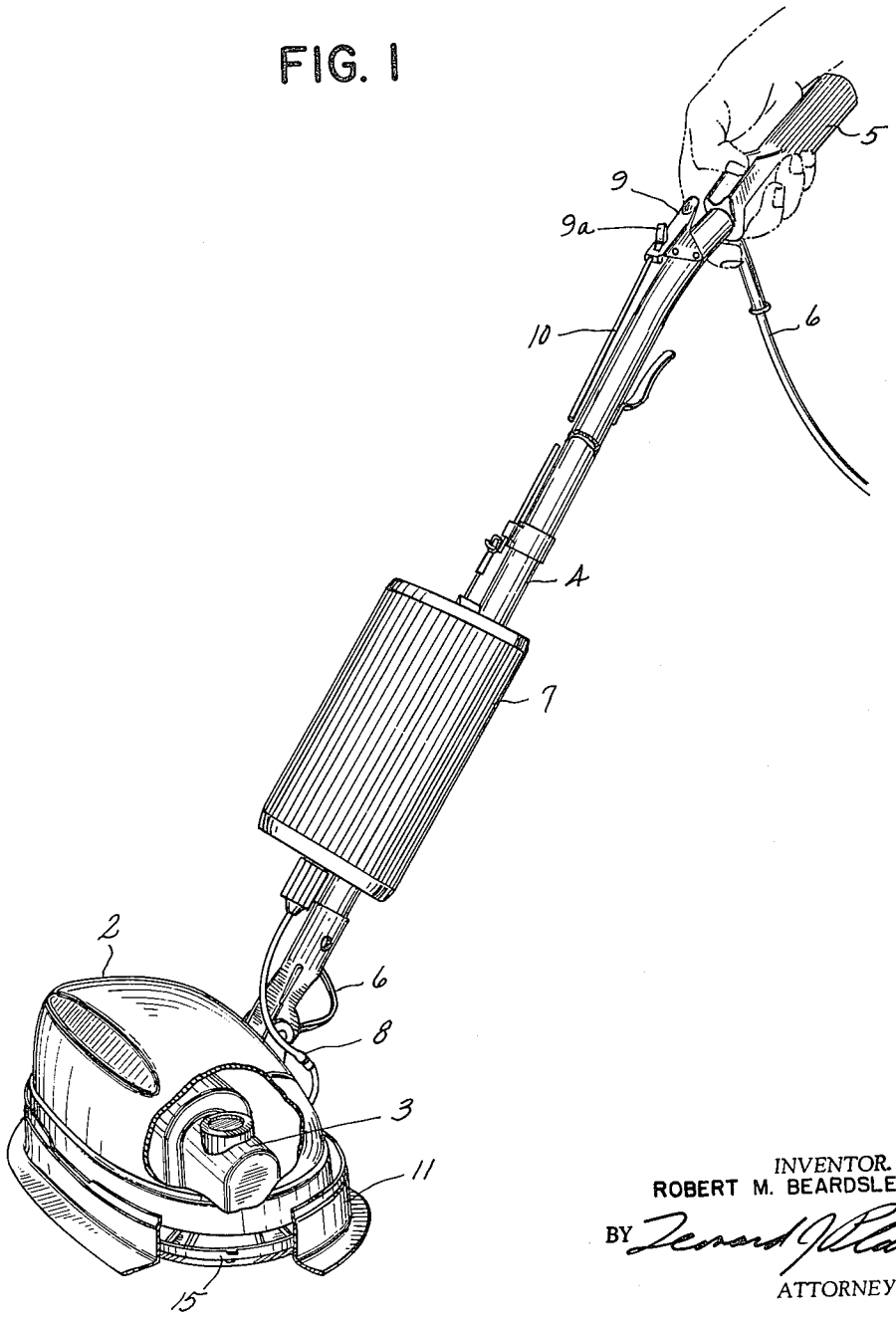
June 15, 1965 R. M. BEARDSLEE 3,188,669

RUG CLEANING ATTACHMENT FOR POLISHERS

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FIG. 1



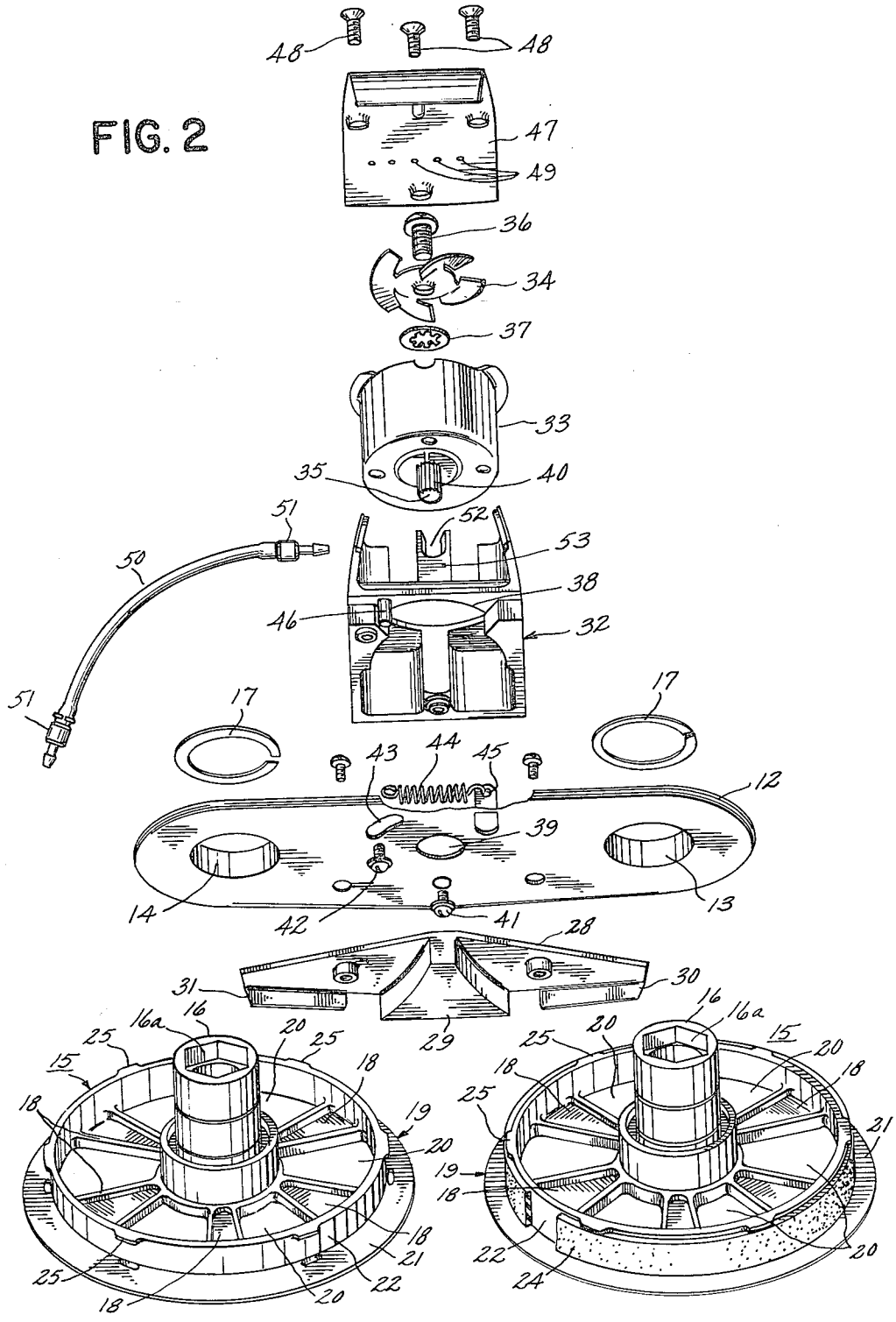
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RUG CLEANING ATTACHMENT FOR POLISHERS

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FIG. 2



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RUG CLEANING ATTACHMENT FOR POLISHERS

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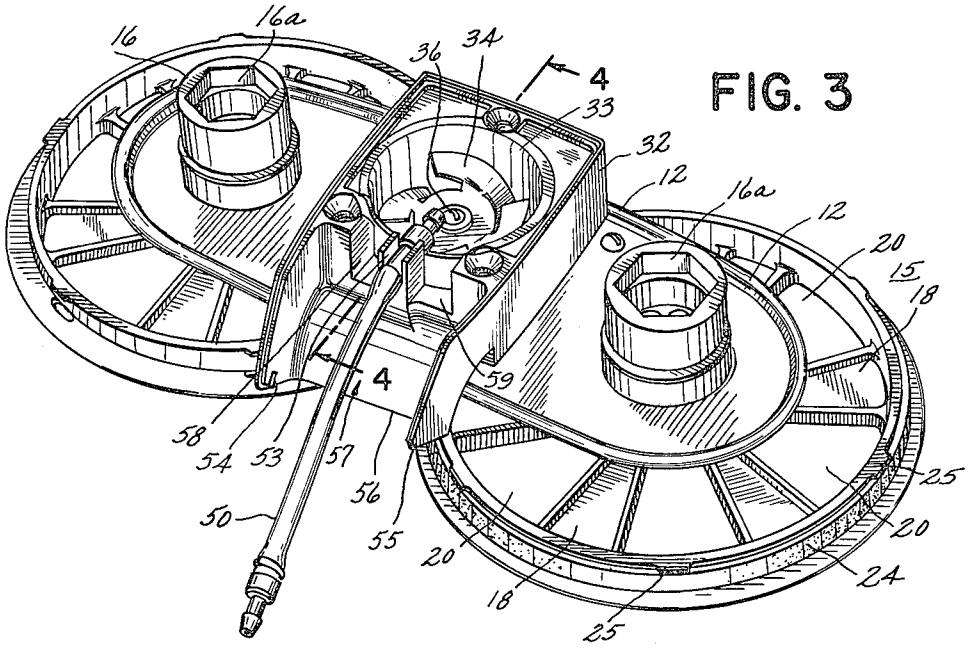


FIG. 3

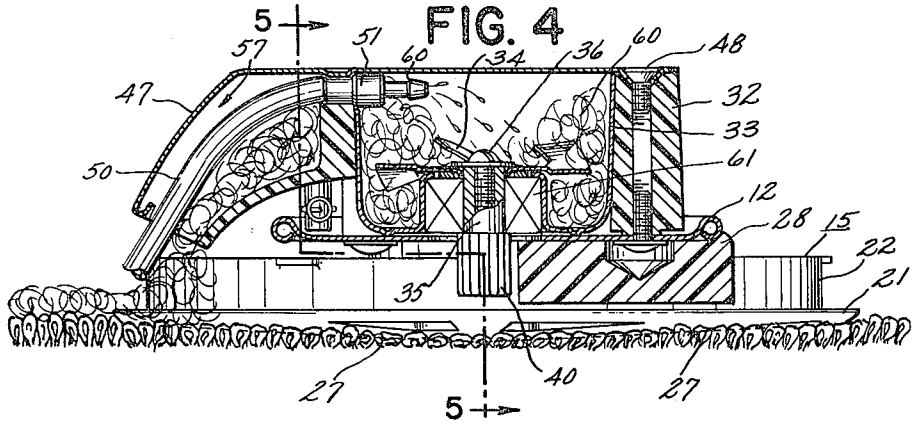


FIG. 4

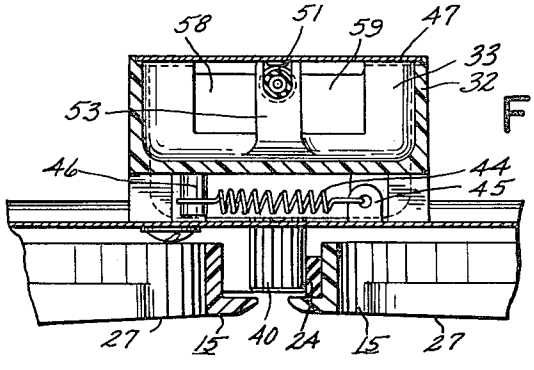


FIG. 5

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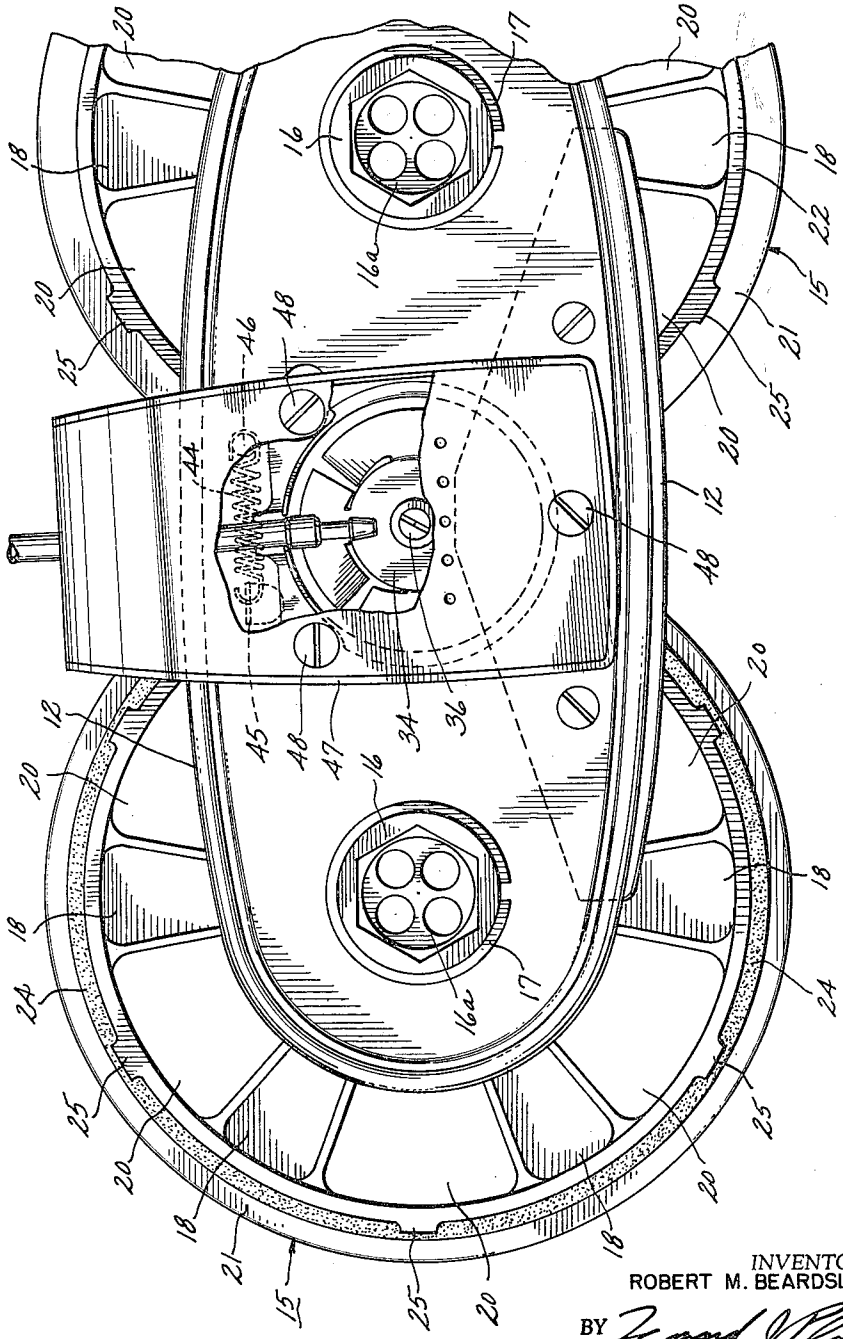


FIG. 6

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3,188,669

RUG CLEANING ATTACHMENT FOR POLISHERS

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8 Claims. (Cl. 15—98)

This invention relates to a rug cleaning device, and more particularly, to an attachment to be used with a rotary floor polisher for cleaning rugs.

Many attempts have been made to develop satisfactory rug cleaning devices for home use; however, none of them have been completely successful. One approach has been to provide plates which fit over the brushes of a usual rotary floor polisher in order to provide a surface which will work a rug cleaning solution into the rug without damaging the rug in a manner that a rapidly rotating stiff brush would do. When floor polishers including such attachment are used to clean rugs, the cleaning solution must first be applied to the rug in a liquid form, which results in an undesirable wetting of the rug.

Another approach has been to provide a self-contained rug cleaning appliance. Those self-contained rug cleaning appliances which are manually operated must depend upon the inherent cleaning power of the rug cleaning solution used in order to clean rugs because they have no mechanical means for successfully working the solution into the rug to achieve satisfactory cleaning. There are some powered self-contained rug cleaning appliances in the prior art; however, they are rather complicated units and require a substantial investment. Since the cleaning of rugs is only a periodic operation in the average household, the purchase of a separate powered rug cleaning device is an unwise investment even though it results in satisfactory results when used.

An object of the present invention is to provide a convenient attachment for use with the usual rotary floor polisher to clean rugs.

Another object is to provide a simple, inexpensive and effective device for cleaning rugs.

Further objects and advantages of the invention will become apparent as the following description proceeds and the features of novelty which characterizes my invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

The present invention is directed to a rug cleaning attachment which fits on a rotary floor polisher in place of the usual brushes. In carrying out the invention, in one form thereof, the rug cleaning attachment includes a foamer receptacle. The receptacle has an agitator which draws air into the receptacle and mixes it with rug cleaning solution to form a foam. The foam flows out of the receptacle and onto the rug. The foam is then worked into the rug by two spoked applicators which are mounted on the driving studs of the polisher for rotation therewith. One of the applicators is in driving relation with a shaft on which the agitator is mounted so that rotation of the applicators both works the foam into the rug *and* drives the agitator to produce the foam.

For a better understanding of the invention, reference may be had to the accompanying drawings in which:

FIG. 1 is a perspective view of a rotary floor polisher used with one embodiment of this invention;

FIG. 2 is an exploded perspective view of a rug cleaning attachment for use with the rotary polisher of FIG. 1;

FIG. 3 is a perspective view of the rug cleaning attachment with the cover of the foamer receptacle removed for purposes of illustration;

FIG. 4 is a cross-sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a cross-sectional view taken along line 5—5 of FIG. 4, and

FIG. 6 is a partial top view of the rug cleaning attachment with a portion of the foamer receptacle cover broken away for purposes of illustration.

FIG. 1 illustrates a rotary floor polisher 1 with which the device of this invention may be employed. The floor polisher comprises a lower housing 2 which encloses a motor unit 3 and from which extends an elongated handle 4. The motor unit 3 is connected to a pair of driving studs (not shown) upon which are normally mounted the brushes which are used to scrub or polish. The upper end of the elongated handle 4 is provided with a hand grip 5 to be grasped by the user for moving the polisher over the floor. Power is supplied to the motor 3 through the power cord 6 and the motor may be turned on and off by means of a conventional switch.

A container 7 is mounted on the handle 4 to store a cleaning solution if the polisher is being used for a cleaning purpose or a liquid wax if the polisher is being used for the application of wax. A conduit 8 is provided extending from the lower end of the container 7 to transfer the liquid stored in container 7 to work area. The release of liquid from container 7 is controlled by means of a switch 9 which is mounted adjacent the hand grip 5 and is connected by means of a rod 10 to a valve located within the container 7. A switch cam lock 9*a* is provided to lock the switch 9 in an open position to provide a constant supply of liquid from the container 7. When liquid is used with the polisher 1, a separate splash guard 11 is provided to prevent the polisher from unnecessarily scattering liquid over too large an area.

The present invention, in one embodiment thereof, includes a foam producing and applying apparatus which is attached to the driving studs in place of the usual brushes. As may be seen in FIG. 2 the attachment includes a base plate 12 provided with a pair of openings 13 and 14. A pair of disk shaped applicators 15 are provided for working a rug-cleaning foam into the rug in order to cleanse a rug. The applicators 15 are structurally the same and, therefore, only one will be described. Each applicator is provided with a central hub 16 which extends through one of the openings 13 and 14 in base plate 12 and is secured therein by means of a split ring 17. The central hub of each applicator is provided a recess 16*a* which receives one of the driving studs of the polisher so that the rug cleaning attachment may be easily mounted on the polisher in lieu of the usual brushes. A number of outwardly extending spaced ribs or spokes 18 connect the central hub to an outer annular rim 19 and form a number of spaced openings 20 between the spokes. The annular rim 19 is formed with an outwardly extending lower ledge 21 and an upwardly extending wall 22.

In order that one of the applicators 15 may function as a power source for the foam producing apparatus a resilient band 24 is mounted around the wall 22 of that applicator (the one shown on the right in FIG. 2). The wall 22 of each applicator is provided around its periphery with a number of outwardly extending tabs 25 which function to retain the band 24 on the applicator. Only one band is necessary in each attachment. Each applicator is formed with a convex lower surface 27 so that foam will flow under the edge of the applicator and fill the openings 20 in order to smoothly spread the foam over the rug (as may be seen in FIG. 4). A distribution plate 28 is attached to base plate 12 adjacent the applicators 15. The distribution plate 28 includes a horizontal portion extending above a portion of the applicators with a downwardly extending projection 29 which extends between the applicators and a pair of walls 30 and 31 which extend downwardly from the

front of the distribution plate 28. The projection 29 and walls 30 and 31 confine the foam to insure proper distribution over the rug.

A housing 32 is attached to the upper side of base plate 12 and receives a foamer receptacle or cup 33 (as may be seen in FIG. 3). A rotatable agitator 34 is provided in the receptacle 33 to produce foam from the rug cleaning solution by drawing air into the receptacle through suitable openings and mixing it with the solution. The agitator 34 is mounted on one end of a shaft 35 by means of screw 36 and lock washer 37. The shaft 35 extends through an opening 38 in receptacle 33 and through an opening 39 in base plate 12.

Shaft 35 bears against resilient band 24 and is driven thereby in order to rotate the agitator 34. Slippage between shaft 35 and the band 24 is prevented by having shaft 35 formed with a knurled portion (as shown at 40) which contacts the band 24.

The housing 32 is mounted on base plate 12 by means of screws 41 and 42 with screw 42 extending through an elongated opening 43 in base plate 12 to facilitate movement of the housing in order to bring the knurled portion 40 of the shaft into engagement with the band 24. For biasing the shaft into engagement with the band 24, the structure last shown in FIG. 5 is employed. A spring 44 is mounted between a tab 45 which is upturned from base plate 12 and a post 46 which extends downwardly from housing 32. The spring 44 biases the housing for movement toward the right to bring the shaft 35 into firm driven contact with the resilient band 24. The screw 42 and elongated opening 43 provides a secure mounting of the housing 32 on the base plate 12 while still allowing the biasing movement.

The upper side of the housing 32 is closed by means of a plate 47 which is attached to the housing by screws 48. The plate 47 is provided with a number of air-admitting openings 49 through which air is drawn into the receptacle by means of the agitator 34 for mixing with the cleaning fluid.

Cleaning fluid is provided to the receptacle 33 by means of a flexible feed tube 50. The feed tube 50 is provided at each end with a rigid connecting member 51. One connecting member is inserted in conduit 8 while the other connecting member is received in a slot 52 provided in an upwardly extending tab 53 formed in housing 32. In this manner cleaning fluid stored in container 7 is discharged through conduit 8 and feed tube 50 into receptacle 33 where it is mixed with air to form a cleaning foam.

As may be seen from FIG. 3 the housing 32 is provided with side walls 54 and 55 and a bottom wall 56 which together with plate 47, form a foam chute 57 which guides the foam from the receptacle 33 to the rug. Two small openings 58 and 59 are provided in the housing 32 at the inner end of the foam chute 57 to provide a path for the foam between the receptacle 33 and the foam chute 57. In FIG. 4 it may be clearly seen how the foam indicated by numeral 60 flows outwardly over the top of the receptacle 33 through the small openings 58 and 59 and down through the chute 57 to the rug.

A bearing 61 is placed about the shaft 35 between the housing 32 and the receptacle 33 so that the shaft and agitator are freely rotatable within the housing 32 and receptacle 33 without unduly wearing any of the elements.

From FIG. 4 it may be seen that one of the rigid connecting members 51 extends sufficiently over the receptacle 33 that fluid being discharged from the connecting member 51 falls directly on the agitator 34 without interfering with the outward flow of foam from the receptacle 33.

In order to clean rugs, the rug cleaning attachment is placed on the polisher by inserting the central hubs 16 over the driving studs of the polisher and connecting the feed tube 50 to conduit 8. When the switch 9 is moved to the open position, cleaning fluid drains from the lower end of the container 7 through the conduit 8 and feed tube 50 onto the agitator 34. The motor 3 is energized, rotating the driving studs and thereby rotating the applicators 15. Through one applicator 15 resilient band 24 and shaft 35 the agitator 34 is also rotated. Agitator 34 draws air into the receptacle 33 through the openings 49 and mixes it with the cleaning fluid to form a foam which flows out through the top of receptacle 33, the openings 58 and 59 and the chute 57 to the rug. The applicators 15 rotate through the foam. Since the lower surface 27 of each applicator is convex, part of the foam will flow under the outer edge of the lower surface and into the recesses 20 formed between the spokes 18. This action spreads an even coating of foam over the rug and the spokes 18 work it into the rug for thorough cleaning. The splash guard 11 prevents foam from being thrown onto undesired parts of the rug.

After the foam has been thoroughly worked into the rug, the rug is allowed to dry and then the dry foam and loosened dirt are removed by use of a vacuum cleaner.

Modifications of this invention will occur to those skilled in the art; and it is desired to be understood, therefore, that this invention is not to be limited to the particular arrangement disclosed, but that the appended claims are meant to cover all modifications which are within the subject and scope of this invention.

What I claim as new and desire to claim by Letters Patent of the United States is:

1. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a horizontally disposed elongated base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a hub extending upwardly through a respective one of said plate apertures, said hubs being rotatably mounted in the plate and connectable to the floor polisher motor; a receptacle mounted on the upper side of said base plate between said applicator hubs; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; a shaft driving said agitator extending through the bottom wall of the receptacle and through said base plate and positioned in driven relation with one of said applicators; and means for ducting foam cleaner from the receptacle to the rug at a point between the two applicators.

2. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a flat horizontally disposed elongated base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a hub extending upwardly through a respective one of said plate apertures and rotatably mounted therein; a small cup-shaped receptacle mounted on the upper side of said base plate between said applicator hubs, said receptacle having a foam outlet opening adjacent the top of the receptacle to insure that unfoamed fluid is retained in the receptacle; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; said agitator having a shaft extending through the bottom wall of the receptacle and through said base plate and positioned in driven relation with one of said applicators; and means for ducting the foam formed in said receptacle from the receptacle to the rug at a point between the two applicators.

3. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a horizontally disposed elongated base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a generally annular outer wall; a resilient band mounted on one of said outer walls; each of said applicators having a hub extending upwardly through a respective one of said plate apertures and rotatably mounted therein; a receptacle

movably mounted on the upper side of said base plate between said applicator hubs; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; said agitator having a shaft extending through the bottom wall of the receptacle and through said base plate between said applicator; means urging the lower side surface of the shaft into firm contact with said resilient band so that the agitator is rotated by the applicator; and said housing including means for ducting the foam formed in said receptacle from the receptacle to the rug at a point between the two applicators.

4. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a generally annular outer wall; a resilient band mounted on the outer wall of one of said applicators; each of said applicators having a hub extending upwardly through a respective one of said plate apertures and rotatably mounted therein; a housing mounted on the upper side of said base plate between said applicator hubs for limited movement toward one of said applicators; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; said agitator having a shaft extending through the bottom wall of the receptacle and through an enlarged opening in said base plate between said applicators; a tab extending upwardly from said base plate toward said housing; a post depending from said housing toward said base plate; a spring mounted between said tab and said post urging said housing toward said applicator and bringing the lower side surface of said shaft into firm contact with said resilient band for driving said agitator to produce said foam; and means for conducting foam from said receptacle to the rug adjacent said applicator.

5. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a flat horizontally disposed elongated base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a hub extending upwardly through a respective one of said plate apertures said hubs being rotatably mounted in the plate and connectable to the floor polisher motor; a housing mounted on the upper side of said base plate between said applicator hubs; a cup-shaped receptacle positioned within said housing; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; a shaft driving said agitator extending through the bottom wall of the receptacle and through said base plate and having its lower side surface frictionally engaging the edge of one of said applicators so that the agitator is rotated by the applicator; said housing including means for ducting foam cleaner from the receptacle to the rug at a point between the two applicators; and a distribution plate attached to the lower side of said base plate between said applicators to direct the foam against the applicators.

6. A rug cleaning device for operative attachment to a motor driven rotary floor polisher comprising: a horizontally disposed base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a hub extending upwardly through a respective one of said plate apertures, said hubs being rotatably mounted in the plate and connectable to the floor polisher motor; a receptacle mounted on the upper side of said base plate between said applicator hubs; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; a shaft driving said agitator extending through the bottom wall of the receptacle and through said base plate and positioned in driven relation with one of said agitators; means for ducting foam cleaner from the receptacle to the rug at a point between the two applicators; and a distribution plate attached to the lower side of said base plate between said applicators to direct the foam against the applicators, said distribution plate including a horizontal portion extending between and above a portion of the applicators with a depending projection extending between the applicators, and further including a pair of walls on opposite sides of said projection which extend downwardly from the front of the horizontal portion of the distribution plates toward the applicators.

7. A rug cleaning device for operative attachments to a motor driven rotary floor polisher comprising: a base plate having a pair of spaced apertures extending therethrough; a pair of applicators for applying foam cleaner to a rug to be cleaned; each of said applicators including a central hub extending through a respective one of said apertures for rotatably mounting the applicators on the plate, said applicators further including an annular outer wall spaced from the hub with a plurality of spaced radial spokes connecting the hub to the outer wall and forming a plurality of spaced openings; a receptacle mounted on the upper side of said base plate between said applicator hubs; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; said agitator having a shaft extending through the bottom wall of the receptacle and through said base plate, and positioned in driven relation with the outer wall of one of said applicators; means for conducting said foam from said receptacle to the rug between said applicators; and a distribution plate attached to the lower side of said base plate between said applicators to direct the foam against the applicators; said foam being received in said plurality of spaced openings and worked into the rug by said plurality of said spokes.

8. A rug cleaning device for operative attachment to a floor polisher having a pair of rotary driving studs comprising: a flat horizontally disposed elongated base plate having a pair of spaced apertures extending therethrough; a pair of disk shaped applicators for applying foam cleaner to a rug to be cleaned; each of said applicators having a hub extending upwardly through a respective one of said plate apertures and rotatably mounted therein; recess means formed in the upper ends of said hubs for operative attachment to the driving studs of the floor polisher; a receptacle mounted on the upper side of said base plate between said applicator hubs; means for introducing cleaning fluid into said receptacle; an agitator rotatably mounted in said receptacle for producing foam from said fluid; said agitator having a shaft extending through the bottom wall of the receptacle and through said base plate and positioned in driven relation with one of said applicators; and means for ducting the foam formed in said receptacle from the receptacle to the rug at a point adjacent the two applicators.

References Cited by the Examiner

UNITED STATES PATENTS

1,596,041	8/26	Young	15—320
2,713,757	7/55	Brennecke	15—230.1 X

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