

July 27, 1926.

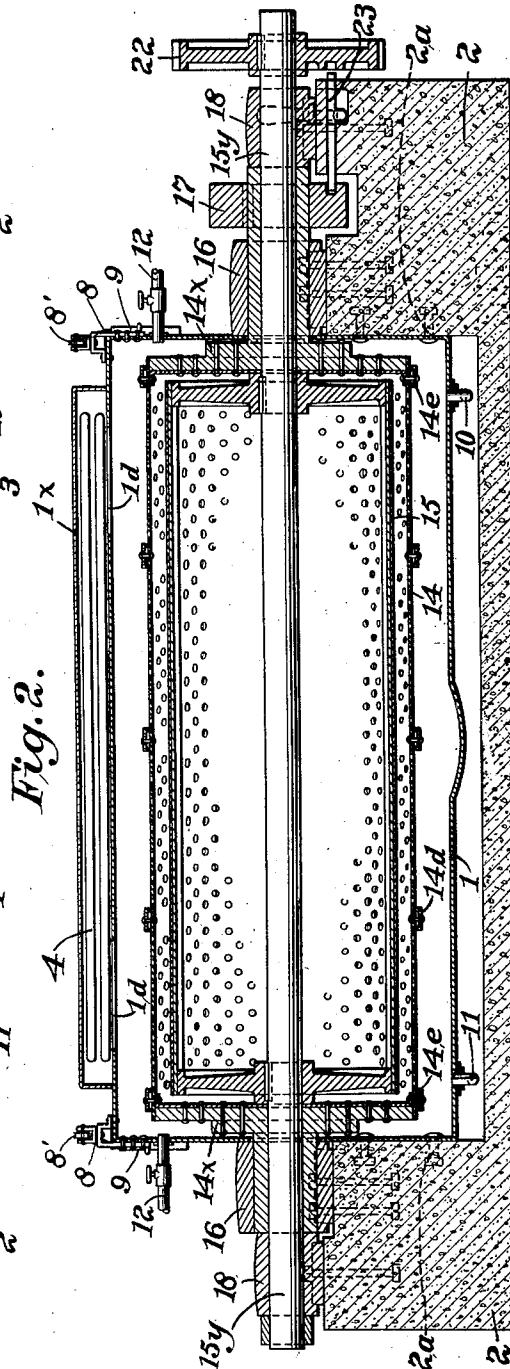
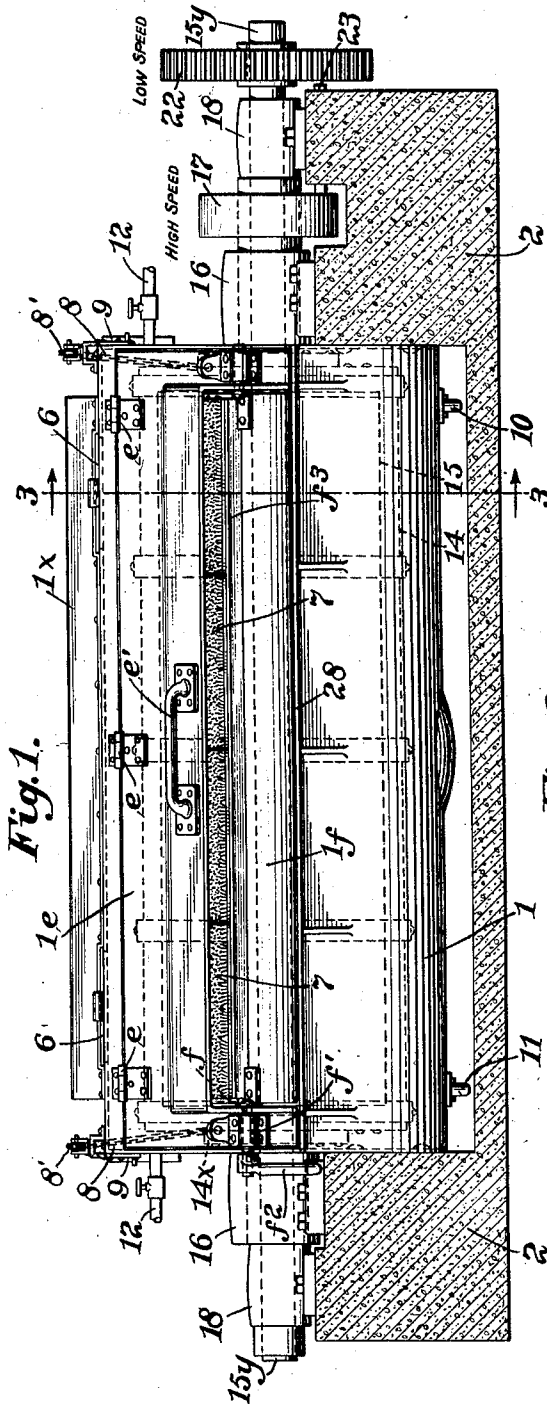
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C. E. STATLER

CARPET AND RUG CLEANING MACHINE

Filed Nov. 13, 1924

3 Sheets-Sheet 1



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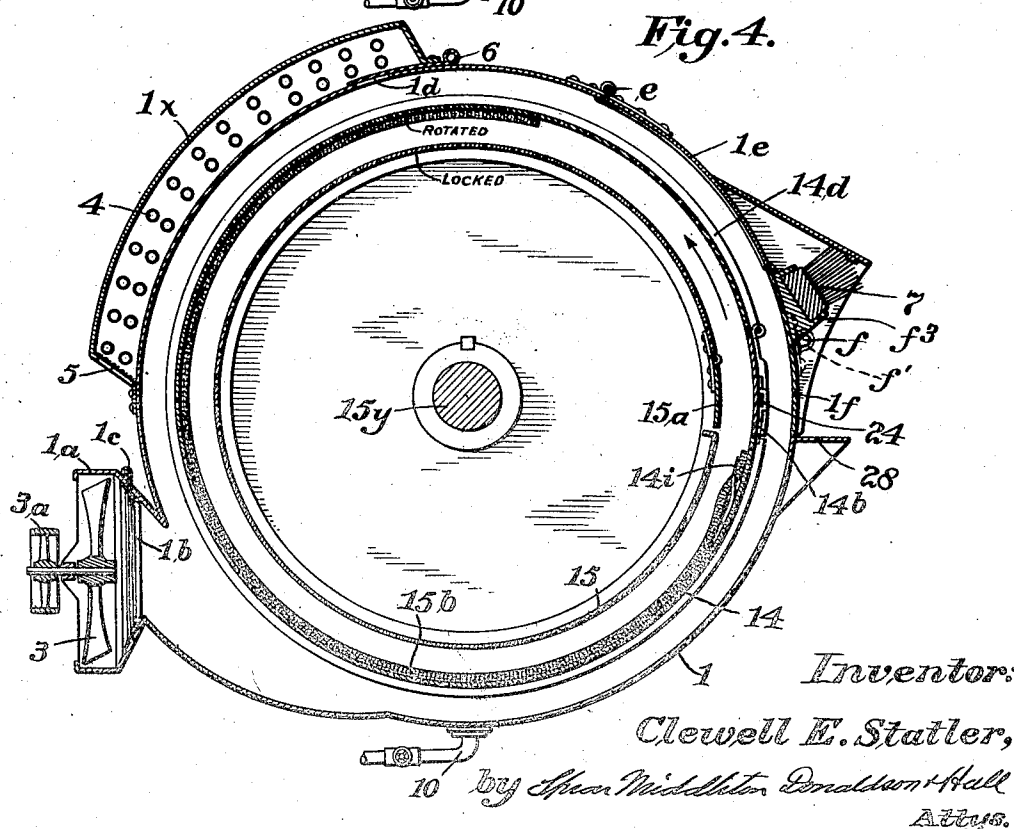
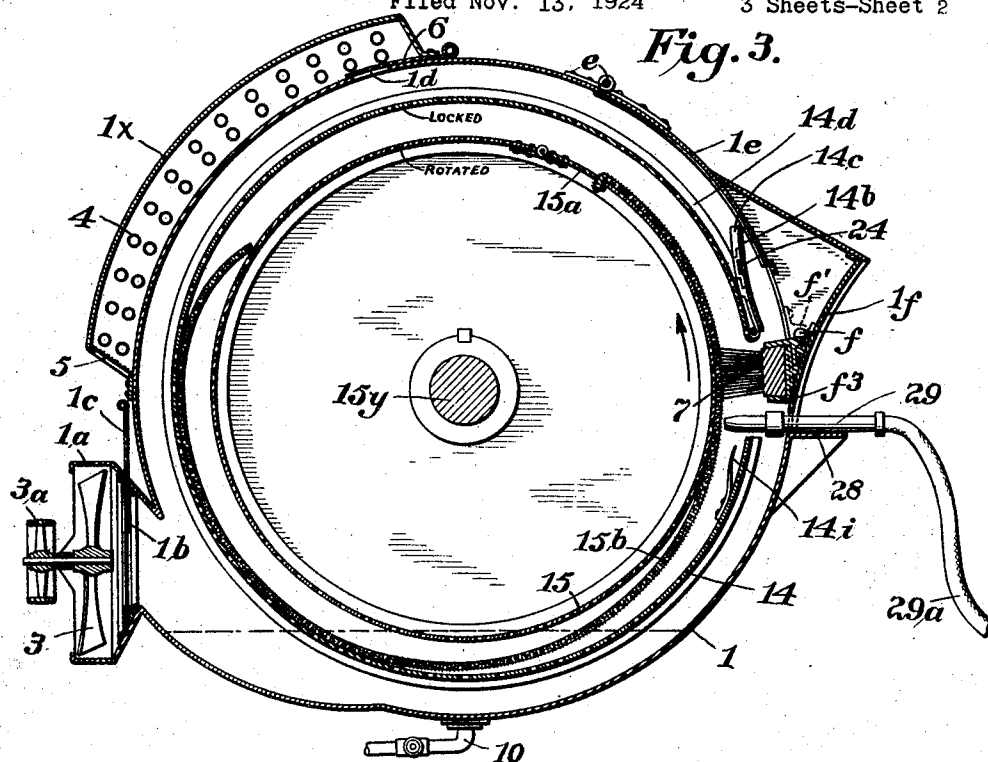
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CARPET AND RUG CLEANING MACHINE

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3 Sheets-Sheet 2



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Fig. 5.

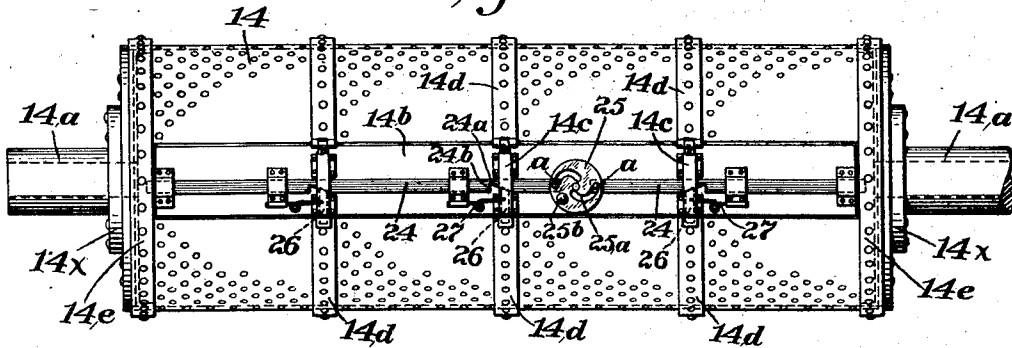


Fig. 6.

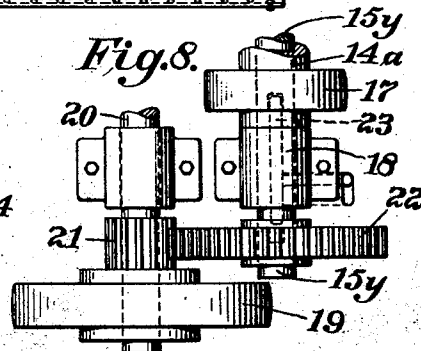
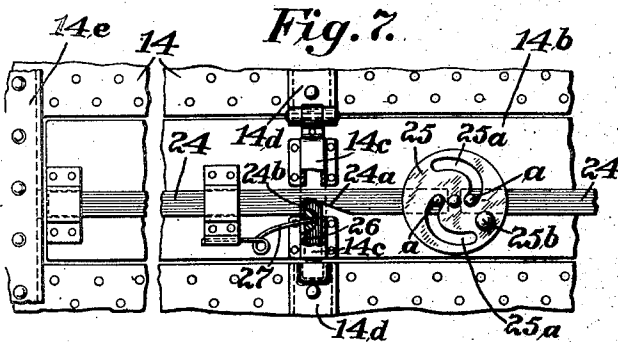
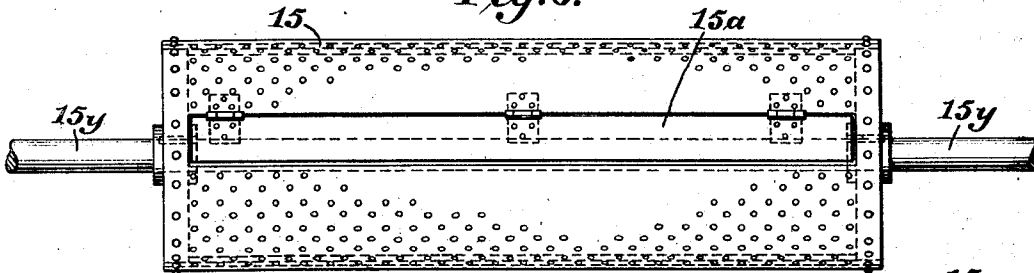


Fig. 10. Fig. 11.

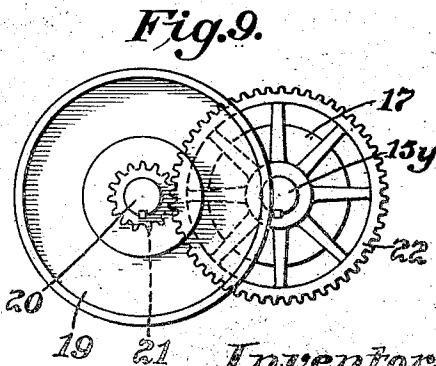
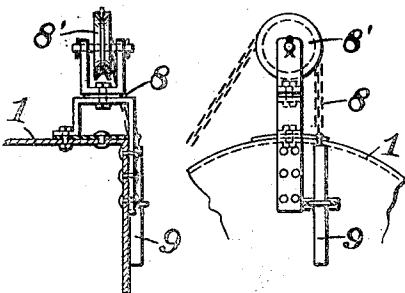


Fig. 9.

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UNITED STATES PATENT OFFICE.

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CARPET AND RUG CLEANING MACHINE.

Application filed November 13, 1924. Serial No. 749,732.

My present invention relates to improvements in machines for cleaning rugs, carpets and the like, and aims to provide an economical and efficient apparatus by which such articles may be successively subjected to the processes of dust extracting, scouring and rinsing, centrifugal moisture extraction, and drying, without removal therefrom.

With these and other objects in view, which will hereinafter appear, the invention includes the novel features of construction and arrangement and combination of parts described in the following specification, the nature and scope of my said invention being defined and ascertained by the appended claims.

What I at present consider the preferred embodiment of my invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of my improved cleaning machine.

Fig. 2 is a longitudinal vertical section.

Fig. 3 is a transverse section on line 3—3 of Fig. 1.

Fig. 4 is a similar section with parts in shifted position.

Fig. 5 is an elevation of the drum 14 removed from the casing.

Fig. 6 is a similar view of the drum 15.

Fig. 7 is an enlarged view showing the door locking mechanism of drum 14.

Fig. 8 is a detail plan view of the drum operating gearing.

Fig. 9 is a detail view showing the gears in side elevation.

Figs. 10 and 11 are detail views of the door counter-balancing means taken at right angles to each other.

Referring by reference characters to these drawings in which the same reference characters indicate identical parts wherever used, the numeral 1 designates a main casing, approximately cylindrical in shape, which may be supported in any suitable manner, preferably on a concrete support, as indicated at 2, having metal reinforcements 2^a to which the heads or ends of the casing are attached, as indicated.

The casing is provided, at a convenient point, with a fan chamber 1^a connected with the interior of the casing and open to the atmosphere, within which is located a suction fan 3, which may be driven by any

convenient means, such for example as belt pulley 3^a.

The opening between the fan chamber and interior of the casing is provided with a door 1^b which may be manipulated by a suitable handle 1^c.

Casing 1 is provided with an auxiliary casing or external chamber 1^x within which are located steam heating pipes or coils 4 connected with any suitable source of steam supply (not shown) and this chamber is provided with an air admission opening on one side, preferably covered by a screen 5, an opening 1^d being provided leading from the opposite side of said chamber to the interior of the casing 1, said opening being provided with a (preferably) sliding closure 6.

The said casing is provided at one side with an opening for the admission of the carpet to be cleaned, which opening extends the entire length of the casing and is provided with a closure member or door 1^e hinged at *e* by strap hinges, which door is made in two sections, one being the main section 1^e above referred to, and the other a section 1^f hinged to the free edge of section 1^e in such a manner as to be reversible. This is preferably accomplished by providing the section 1^f at its ends and approximately centrally thereof with trunnions *f* journaled in bearings *f*¹ projecting from or carried by the edges of door section 1^e, one of these trunnions being extended and provided with an operating handle *f*².

The section or member 1^f is provided on one face thereof with a dovetailed channel member *f*³ in which is removably held a brush 7, the brush being made in sections and held by slidable engagement of their dovetailed backs with said guide whereby they may be easily replaced when worn.

With door section 1^e closed and the handle *f*² swung in one direction, the opening to the casing will be completely closed, with the brush outermost, while if the handle is swung in the other direction, the brush will be innermost in position to coact with the article being cleaned in the manner hereinafter described, the casing being closed by cooperation of the door with the casing projection, as shown in Fig. 3.

For convenience in manipulating the door

1° it is provided with a handle e' and it is preferably counterbalanced by suitable means such as flexible elements 8 (shown as chains, Figs. 1, 10 and 11) attached to the free edges of the door section 1° at the corners thereof and passing over guide rollers 8' and connected to weights 9.

The casing or tank 1 is further provided with liquid inlet and drain pipes communicating with its bottom or lower part, whereby cleansing or rinsing liquid may be introduced, such pipes being designated 10 and 11 in the drawing, respectively, and the inlet pipe being connected with any suitable source of supply (not shown), and the outlet being led to waste, and both pipes being provided with customary shut-off valves.

The casing 1 is further provided with a steam inlet pipe 12 connected to any suitable source of steam supply (not shown) being provided with a shut-off valve whereby live steam may be admitted at will.

Within the casing or tank 1 are located two concentric spaced cylinders or drums 14 and 15 (Figs. 3 to 6 inclusive), both being made of perforated or reticulated material, as indicated. These drums are mounted so as to be capable of being independently rotated or locked against rotation as desired. This is preferably accomplished by providing the drum 14 with hollow trunnions 14^a which may be secured to the drum heads in any suitable manner, as by having flanged plates 14^x bolted or riveted to the heads of the drums, these trunnions projecting through openings in the tank ends and being journaled in bearings 16 carried by the support 2. The drum 14 may be rotated in any suitable manner, as for example by belt pulley 17, (see Figs. 1, 2 and 8).

Drum 15 has trunnions or shaft extensions 15^v which extend through the hollow trunnions 14^a and are journaled in bearings 18 carried by the main support 2, and means are provided for rotating the drum 15 from any suitable source of power, such for example as belt pulley 19 fast on a counter shaft 20 which carries a small spur gear 21 meshing with a larger gear 22 fast on one of the shaft extensions or trunnions 15^v, (see Figs. 8 and 9).

Any suitable means may be provided for locking either of the drums against movement and in predetermined position or definite relation to the casing, and such means may take the form of a slidable bolt or bar 23 having its opposite ends adapted to engage locking recesses in the pulley 17 and gear 22 respectively.

Drum 14 is provided with a door 14^b adapted to be swung open to admit the rug or carpet, which door is provided with locking means for holding it in closed position. My preferred form of locking means com-

prises multiple bolts capable of simultaneous operation from a single operating member, and to this end I provide a pair of elongated bolt members 24 slidably guided in guideways formed in the reinforcing bands or strips 14^c (which correspond in position to reinforcing bands 14^d on the drum) which bars have projections a engaging spiral slots 25^a in a cam plate 25 rotatably mounted on the door and provided with an operating knob or handle 25^b. Rotation of the cam plate in one direction will draw the bolts inward towards each other or retract them from engagement with the keeper recesses in the edge of the door opening (such openings being formed in the inside edges of the end reinforcing bands or hoops 14^c) while movement in a reverse direction will effect the locking action.

Cooperating with these are a plurality of edge or intermediate bolts 26 which are slidably held in the reinforcing members 14^c and are under pressure of springs 27 tending normally to retract them from interlocking position. Bolts 24 have inclined cam faces 24^a bearing against the rear end faces of the bolts 26 and shoulders or stops 24^b which coact with the sides of the bolts 26 to limit inward movement of bolts 24, such inward movement allowing the springs to retract the bolts 26 while reverse movement causes them to be projected outward by the cam faces 24^a until their outer ends are projected beyond the edge of the door and into engagement with the keeper recesses formed in the intermediate or strap reinforcing members 14^d.

The drum 14 is provided on its inner surface adjacent the door opening, with carpet engaging means which preferably take the form of spurs as indicate at 14ⁱ, Figs. 3 and 4. The inner drum 15 is provided with carpet edge retaining means which preferably takes the form of a clamp plate 15^a, hinged at one edge of an opening extending approximately the full length of the drum and being of such width relative to the width of the opening that when the door is opened inwardly and the edge of the carpet or rug inserted, outward movement of the door will grip the carpet, and the pull of the carpet, on rotation of the drum, will cause it to be held with a clamping action which will increase with the amount of pull.

Rotation of the drum 15 will, therefore, cause the carpet 15^b to be wrapped around the drum.

Casing 1 is provided adjacent the opening thereof, with a table or shelf 28 for supporting the carpet at the time of entry or withdrawal.

Associated with the apparatus above described is a nozzle 29 for supplying fluid under pressure (such as compressed air), which nozzle may be connected by a flexible

pipe or hose 29^a to any suitable source of supply (not shown) and also connected by the usual three-way valve, or the like, to a source of suction for producing a vacuum in the tank.

The operation of the apparatus above described may be briefly described as follows:—

The rug or carpet strip in a rolled condition is placed on the table or shelf 28 and, the doors 1^e and 14^b being open with the door openings in alignment, the edge of the strip is clamped to the inner drum by the use of the clamping member 15^a, as hereinbefore described.

Drum 15 is then rotated in the direction of the arrow, Fig. 3, which causes the rug to be wrapped around the drum. The door 1^e is then swung down with the brush of section 15 inward and in contact with the surface of the rug or carpet, the door 14^b being open to permit this. When in this position, it will be noted that the brush-carrying door member 1^f does not completely close the casing, leaving an elongated opening through which the nozzle may be introduced. As the drum is rotated, the brush loosens and opens up the pile and allows the blast of air to penetrate and blow through, or vacuum to draw from, the rug or carpet, the nozzle being moved back and forth over the surface of the rug. Simultaneously with this operation, the door 1^b to the fan chamber is open and the fan set in operation to carry away the dust and dirt removed, the suction produced by the fan aiding the removal. Thereafter the fan is stopped and the door 1^b closed, and the tank or casing 1 is charged with a cleaning fluid, preferably to a height just sufficient to submerge the lower portion of the drum 15 and carpet thereon in the fluid, and the rotation of the drum is continued to effect the washing or scouring action during which time the brush may be left in contact with the surface of the carpet to assist the scouring action, the air or vacuum nozzle at this time being removed. After the scouring action has been continued for a sufficient length of time, the washing liquid may be removed through the discharge opening 11 and fresh liquid introduced through pipe 10, and the operation continued for a rinsing action, whereafter the rinsing liquid is drawn off. Rotation of the drum 15 is now discontinued and it is locked against rotation by the shifting of the locking device 25 which releases the drum 14, which had heretofore been locked against rotation. Doors 14^b and 1^e are now swung open and as the openings are in line, the operator has easy access to the rug, the edge of which is removed from the clamping devices 15^a, and hooked upon penetrating devices 14^f, whereupon the door 14^b is closed, and locked, and doors 1^e, 1^f closed, the lat-

ter being turned so as to have the brush project outwardly, as shown in Fig. 4. Drum 14 is now rotated at high speed, which causes the liquid to be removed by centrifugal action. The rotation of drum 14 is then discontinued, the doors opened and the edge of the rug again clamped to drum 15, whereupon the doors are closed and the rug subjected to the action of live steam introduced through the steam pipe inlets 12, and thereafter dried by opening the door 1^b and starting the exhaust fan, which causes hot air to be drawn from the steam coil heating chamber 1^x, door 6 thereof being open, whereby the rug or carpet is thoroughly dried, aided by the brush 7 and air nozzle 29, if desirable. Thereafter the drums may be brought to rest with their door openings in alignment, and the edge of the rug or carpet detached and drawn out and rolled up on the table, drum 15 being unlocked so as to allow it to rotate idly as the carpet is drawn out.

Having thus described my invention, what I claim is:—

1. Apparatus for cleaning fabric articles comprising a stationary casing adapted to receive cleansing liquid and having means to withdraw the liquid therefrom, a pair of rotatable reticulated drums therein, one within the other, means for selectively rotating said drums, the inner at low speed and the outer at high speed, means for locking either of said drums against rotation when the other is rotated, means for attaching an edge of the fabric to either drum at will, said outer drum being adapted to remove liquid from the fabric article by centrifugal action.

2. In apparatus of the class described, a stationary casing, a pair of spaced reticulated drums therein one within the other, means for selectively attaching an edge of a fabric to either drum, means for driving the inner drum at slow speed, and means for driving the outer drum at high speed for centrifugal fluid extraction.

3. In apparatus of the class described, a stationary casing, a pair of spaced reticulated drums therein, one within the other, means for driving either of said drums at will, the inner at low speed, and the outer at high speed, means for locking the undriven drum against rotation, means for attaching an edge of the fabric article to be cleaned to the inner drum, said outer drum having an article admission opening extending lengthwise thereof, and a door adjacent said opening, and having fabric article attaching means on its inner wall adjacent the edge of the opening.

4. Apparatus of the class described comprising a stationary casing having a lengthwise opening, a reticulated drum mounted to rotate in said casing and having a length-

wise opening, a second drum mounted to rotate within said reticulated drum, and having means for clamping the edge of a fabric article thereto, means for selectively
 5 rotating the inner and outer drums at relatively slow and high rates of speed, a hinged door for the casing carrying a brush adapted to project through the opening in the reticulated drum, said reticulated drum having a
 10 closure member for closing the opening therein when the brush is withdrawn, and having means adjacent said opening for engaging an edge of the fabric article.

5. The apparatus of claim 4, in which the
 15 hinged door of the casing is reversibly pivoted to the casing by pivots offset from the center line of the door so that when the door is placed with the brush inward the casing opening is completely closed while
 20 when the door is reversed the brush is withdrawn and a slot left for the insertion of an air nozzle.

6. Apparatus for cleaning fabric articles, comprising a stationary casing, a rotatable
 25 drum therein having fabric clamping means, said casing having an elongated door opening, a hinged door for said opening comprising a main member hinged to said casing, and an auxiliary member reversibly
 30 hinged to said main member, and a brush

carried by one face of said auxiliary member.

7. Apparatus for cleaning fabric articles, comprising a stationary casing, means for admitting liquid thereto and withdrawing
 35 it therefrom, a reticulated drum rotatably mounted within the casing and having fabric holding means, a second reticulated drum within the casing encircling said first
 40 named drum, and having interior fabric holding means, and means for rotating said outer drum at high speed for centrifugal moisture extraction.

8. Apparatus for cleaning fabric articles comprising a main casing, a reticulated
 45 drum therein having tubular trunnions projecting from the ends of the casing, bearings in which said trunnions are journaled, a second reticulated drum within said first
 50 named drum and having trunnions extending through said tubular trunnions, means for independently driving said trunnions selectively at different rates of speed, said
 55 inner drum having means for attaching an edge of a fabric article to its outer periphery, and said outer drum having means for attaching an edge of such a fabric article to its inner periphery.

In testimony whereof I affix my signature.
 CLEWELL E. STATLER.