July 6, 1948. F. H. CASTOE 2,444,728

SPOT REMOVING MACHINE

Filed Feb. 16, 1946

Fig. 1.

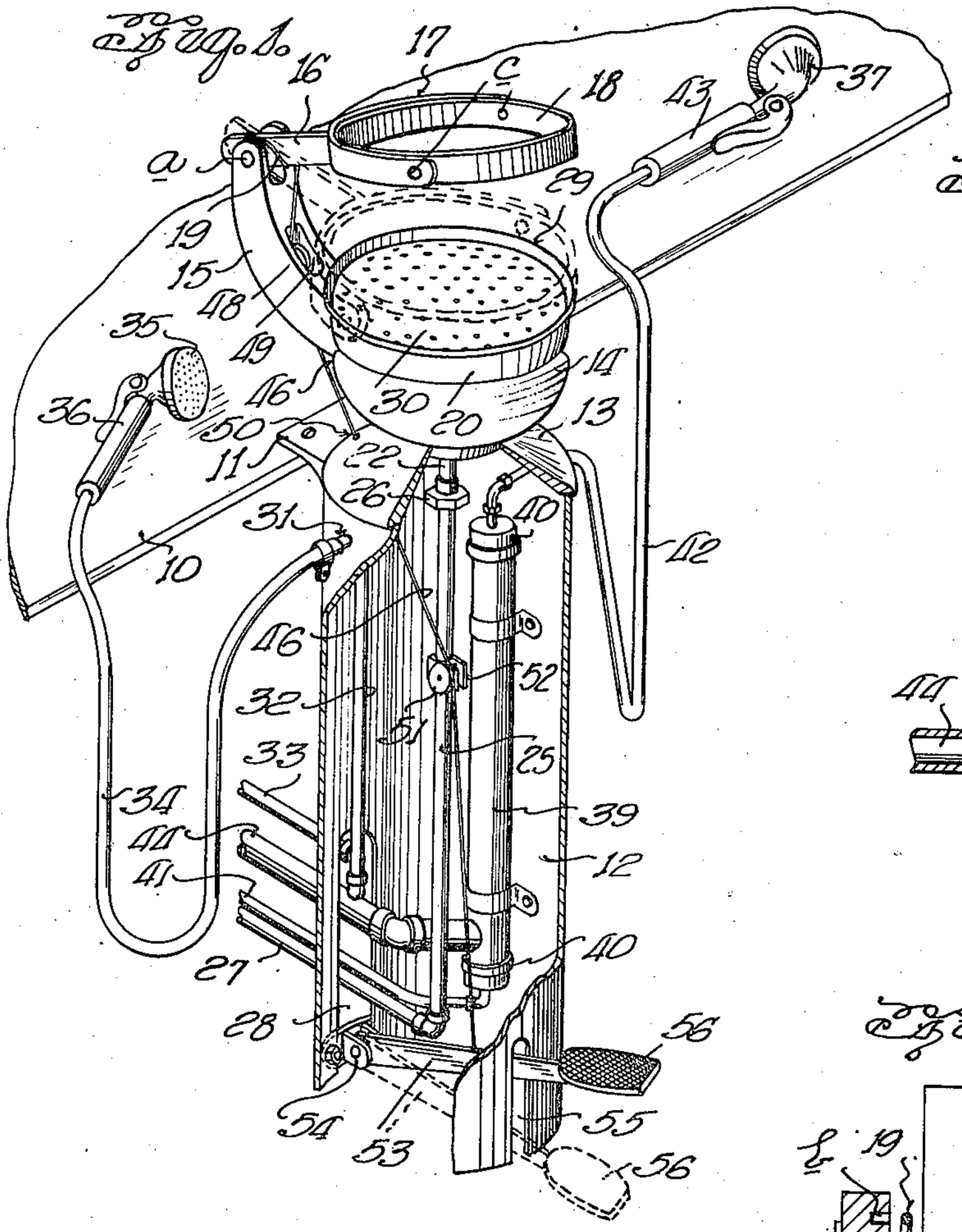


Fig. 2.

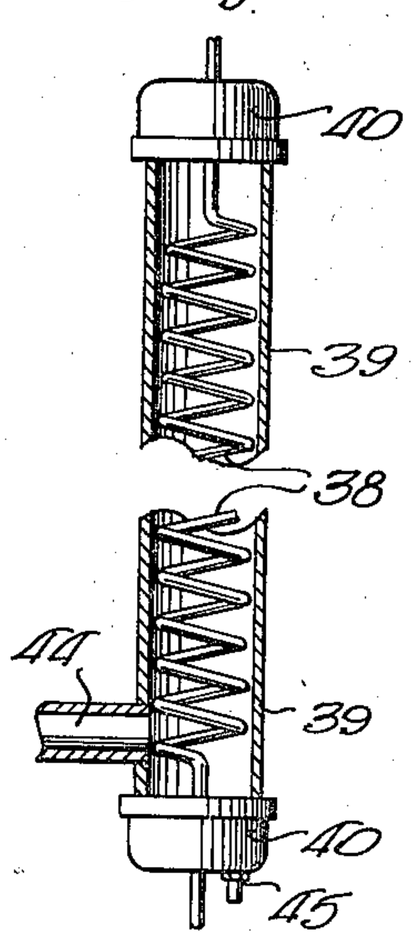


Fig. 4.

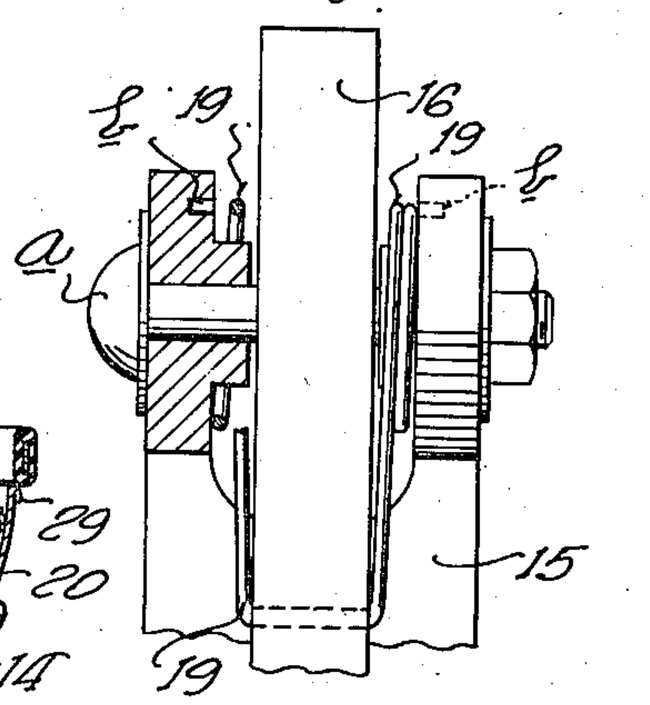
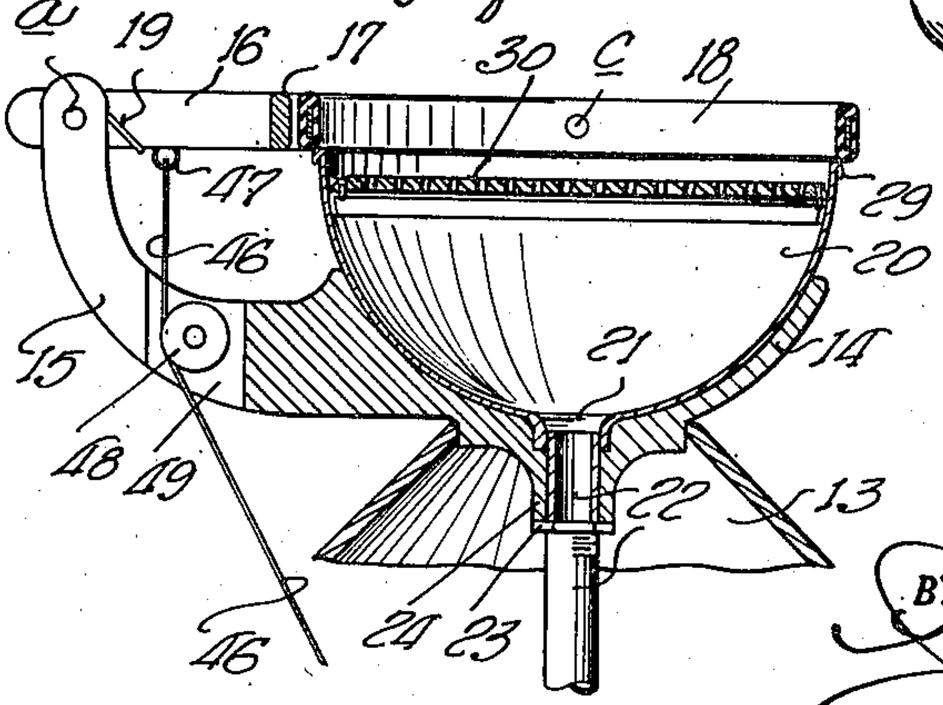


Fig. 3.



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SPOT REMOVING MACHINE

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2 Claims. (Cl. 68—5)

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This invention relates to garment cleaning apparatus and it has particular reference to spot removing machines.

The principal object of the invention is to provide cleaning establishments with a medium with which to isolate that part of a garment containing a spot, to the exclusion of other parts thereof more susceptive to the cleaning effects of conventional detergents and solvents. The invention further provides for the reception of a solvent within the isolated area, characteristically known to be capable of removing obstinate spots or stains, together with means providing a backing for the fabric while draining off the solvent during or after treatment of the fabric by sponging or rubbing to free the same of the spot.

Another object of the invention is to provide a spot removing machine having means for applying water to that portion of a garment from which a spot has been removed to flush out the solvent, as well as means for preheating and for applying air to the fabric subsequent to the flushing operation.

Still another object of the invention is to provide a compact spot removing machine, simple of construction and operation which will afford a garment cleaner with a highly effective yet economical medium for removing spots from garments without the necessity for immersing the entire garment in a cleaning solution.

With the foregoing objects as paramount, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawing wherein:

Figure 1 is a perspective view of a spot removing machine constructed according to the present invention, with parts broken away.

Figure 2 is a fragmentary detail view of the air preheater, in vertical section.

Figure 3 is a detail view in vertical section showing the upper portion of the machine including the solvent receiving and flushing basin; fabric retaining clamp and actuating means, and

Figure 4 is a fragmentary detail view of the spring tensioned clamp arm, normally held in raised or inoperative position.

Continuing with a more detailed decsription of the drawing, reference is primarily made to Figure 1 wherein numeral 10 denotes a work table to which is secured by means of a clamp or bracket 11, a housing 12 of cylindrical or other desired cross-sectional shape. Moreover, the relationship of the housing 12 and its associated parts to be described later, and the table 10 to which

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the housing is attached, may be altered to suit various requirements.

Mounted upon the substantially trunco-coniform top 13 of the housing 12 is a casting consisting of a bowl 14 having a rigid, arcuate arm 15 formed thereon, the upper portion of which latter is bifurcated to receive an end of an arm 16 on which is formed a yoke 17. The yoke 17 embraces a clamping ring 18, to which reference will again be made presently.

The yoke arm 16 is pivoted at *a* to the bifurcated end of the supporting arm 15 and a double torsion spring 19 is mounted on the pivot pin *a* of the arm on each side thereof and has a portion underlying the arm 16 to maintain the yoke and consequently the clamping ring 18 in the elevated or inoperative position shown in Figure 1 in solid lines. The ends of the torsion spring 19 are secured in recesses *b* in the bifurcations of the supporting arm 15, as shown in Figure 4.

Mounted in the bowl 14 of the casting is a basin 20 in whose bottom is formed a flanged opening 21, the flange conforming to a recess in the bowl 14 and interiorly threaded to receive a short threaded section of pipe 22. A nut 23 (Figure 3) is threaded onto the lower end of the pipe 22, against a boss 24 formed on the bowl 14 at its bottom. Thus, the basin 20 is held securely in the bowl.

A drain pipe 25 is connected to the pipe section 22 by means of a union 26 (Fig. 1) in order that the liquids may be drained from the basin 20 and disposed of through pipes 25 and 27, the latter entering the housing 12 near its bottom through a slot 28 therein.

The basin 20 has a rolled rim 29 about its perimeter, against which bears the clamping ring 18 which, as apparent in Figure 3, is rubber covered to insure a seal against escape of liquid from the receptacle formed by the ring when in clamped position on the perimeter of the basin 20 to receive solvent and water. Moreover, this rubber covering more securely clamps the fabric of a garment overlying the basin 20 and prevents accidental slippage during treatment for the removal of a spot.

At or near the top of the basin 20 is a perforated supporting plate 30 for fabric placed over the basin. This plate affords a backing for the fabric while the latter is being sponged or rubbed to dislodge substances forming the spot, under the influence of a solvent. Excess solvent and water will drain into pipe 25 through the apertures in the plate 30.

Protruding from one side of the housing 12 is

a fitting 31, communicating with a pipe 32 rising in the housing 12 from a supply pipe 33. A flexible hose 34 is connected to the fitting and carries on its end a spray nozzle 35, provided with a hand manipulated valve 36. By means of this hose and nozzle, water may be sprayed onto that portion of a garment overlying the basin 20 and clamped thereon by ring 18, after the initial application of the solvent, as described.

Subsequent to the flushing operation with water by means of nozzle 35, it is desirable to dry the cleaned area by applying preheated air thereto. This is accomplished through the medium of an air nozzle 37, to which air is passed after having traveled through a coil of pipe 38 enclosed in a tube 39 arranged in the housing 12 parallel with water pipe 32 and drain pipe 25. Both ends of the tube 39 are closed by caps 40 while the pipe forming the coil 38 extends through holes made in these caps at each end, the lower end being connected to a pipe 41 leading to a compressor (not shown) while the upper end protrudes from the housing to receive an end of a hose 42 serving the nozzle 37 which latter is controlled by a hand manipulated valve 43.

To heat the air passing through the coil 38, steam is supplied to the tube 39 through a steam line 44, the latter entering the bottom of the said tube through the slot 28 of the housing as do all of the service pipes described. A drain plug 45 for condensate in the tube 39 is threaded into an opening in the lowermost of the caps 40.

To bring the clamping ring 18 downwardly onto the basin 20, or a garment placed over the latter, a wire cable 46 is connected at one end to an eye 47 situated on the arm 16 of the clamping ring yoke intermediate its ends. This cable extends downwardly under a grooved pulley 48, disposed rotatably in a recess 49 in the arm 15, thence through an opening 50 in the top 13 of the housing and over a similar pulley 51, mounted in a bracket 52, supported on the drain pipe 25. Continuing downwardly, the lower end of the cable 46 is secured to a foot operated lever 53 intermediate its ends. The lever is pivoted to a bracket 54 affixed to the housing 12 at its base and extends through a slot 55 therein diametrically opposite the pivotal point. A foot pedal 56 is attached to or formed on the outer end of lever 53, as shown.

In operation, it will be observed that the clamping ring 18 is in normally raised position under tension of spring 19. A garment having a spot therein to be removed, is so disposed over the basin 20 that the spot will be in the approximate center of the basin. The foot is placed upon the pedal 56 to impose tension on the cable 46 to cause the ring 18 to be lowered onto the rim of the basin 20, or the fabric overlying the same. By virtue of the pivoted relationship at *c* between the yoke 17 and ring 18, the latter has a tendency to adjust itself on the basin to impose uniform pressure on the fabric throughout its contact with the basin.

The rubber covering on the ring 18 will afford a seal capable of retaining liquid, hence a receptacle is formed by the ring in which is poured a quantity of solvent and while the ring is held down by pressure on the foot pedal, the effects of the solvent are augmented by rubbing or sponging the fabric. After the spot in the fabric is thus removed, the latter is sprayed with water by means of the nozzle 35 to flush out the remaining solvent, after which the damp area is dried by applying hot air thereto, preheated by its passage through the preheating coil 38. After drying the fabric, pressure on the pedal 56 is relieved and the spring 19 will return the clamping ring 18 to its raised position.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. A machine for removing spots in fabric comprising a tubular housing, a basin supported on the top of said housing, over which fabric is placed for cleaning, an arm extending outwardly from said housing, a clamping ring adapted to operatively engage the perimeter of said basin, a yoke pivoted to said ring having an arm pivoted at its end to the end of said first arm, a torsion spring embracing the pivot of said arms for holding said ring normally in raised position, a foot pedal; a cable connecting said pedal to said yoke arm to lower said clamping ring to operative position against the resistance of said torsion spring, means entering and rising in said housing for supplying water for application to said fabric, means also rising in said housing for preheating air for application to said fabric and means passing through said housing for draining said basin.

2. A spot removing machine including a tubular housing, a basin mounted on said housing having a perforated plate for supporting the spotted area of a garment, a clamping ring adapted to be operatively disposed on the perimeter of said basin to hold said garment, a yoke pivotally engaging said ring having an arm thereon pivotally attached to a support extending laterally from said basin to the end of which the arm of said yoke is pivotally attached, a torsion spring embracing the pivot of said arms for holding said yoke and ring tensionally in raised position, a foot lever below said basin, a cable connected to said lever and extending upwardly through said housing to said yoke arm for lowering said clamping ring, means for supplying water for application to a garment within the confines of said ring, means in said housing for preheating air for application within the confines of said ring and means for draining liquid from said basin.

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