March 9, 1948. E. W. PICKETT, JR., ET AL 2,437,478

GARMENT CLEANING MACHINE

Filed July 30, 1942 3 Sheets-Sheet 1

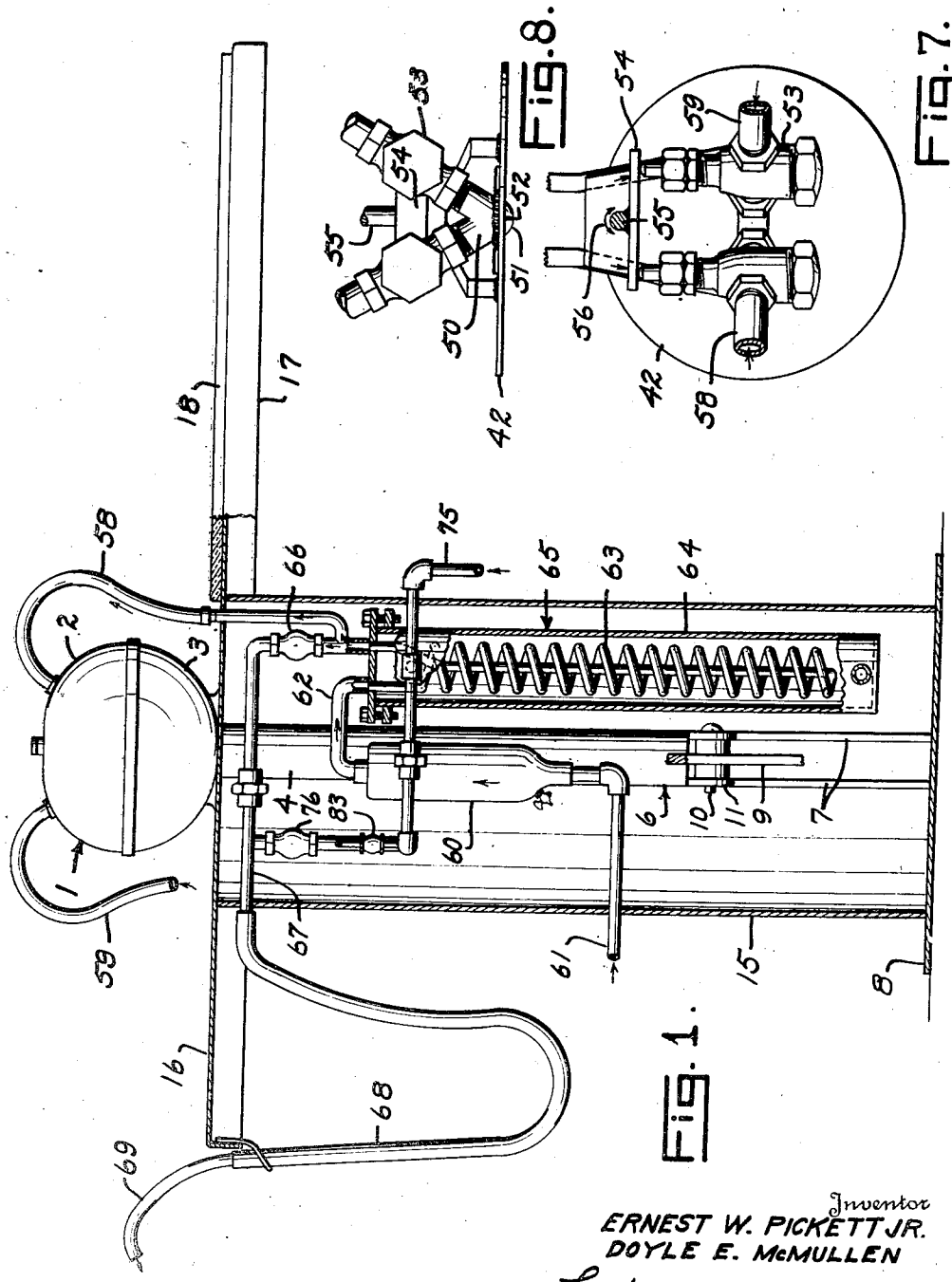


Fig. 1.

Fig. 8.

Fig. 7.

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GARMENT CLEANING MACHINE

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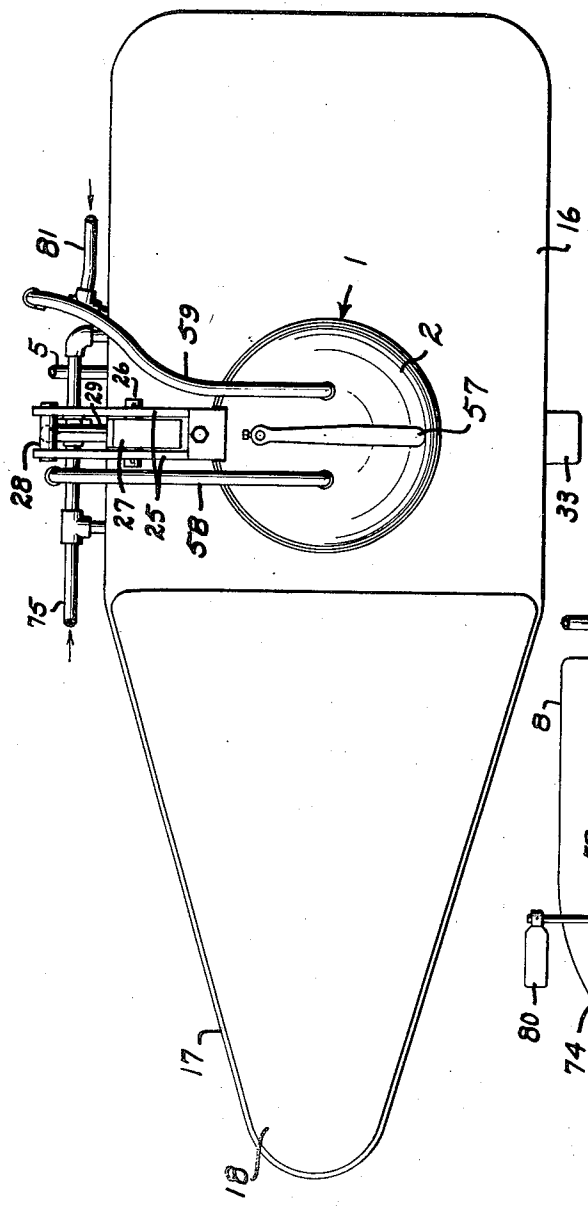


Fig. 2.

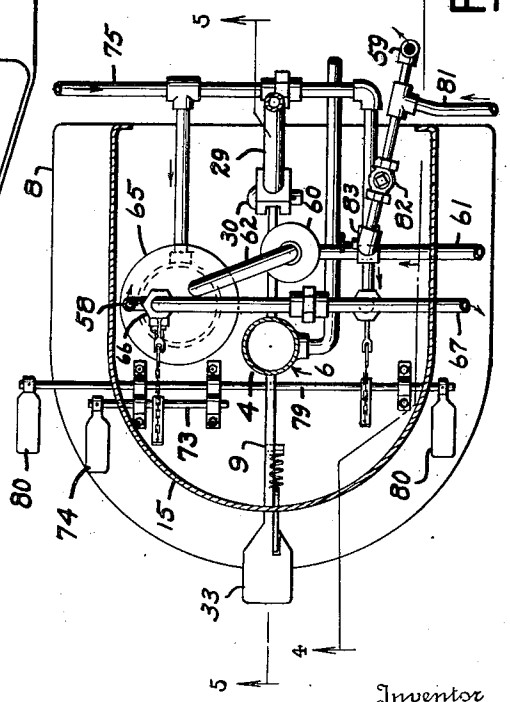


Fig. 3.

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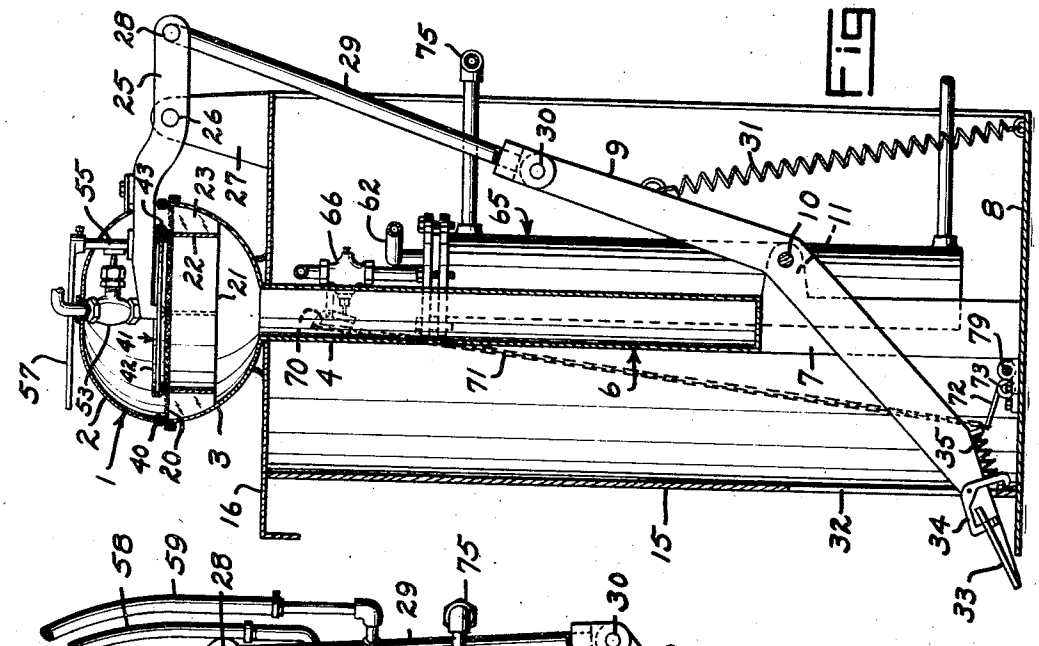
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Filed July 30, 1942 3 Sheets-Sheet 3

Fig. 5.



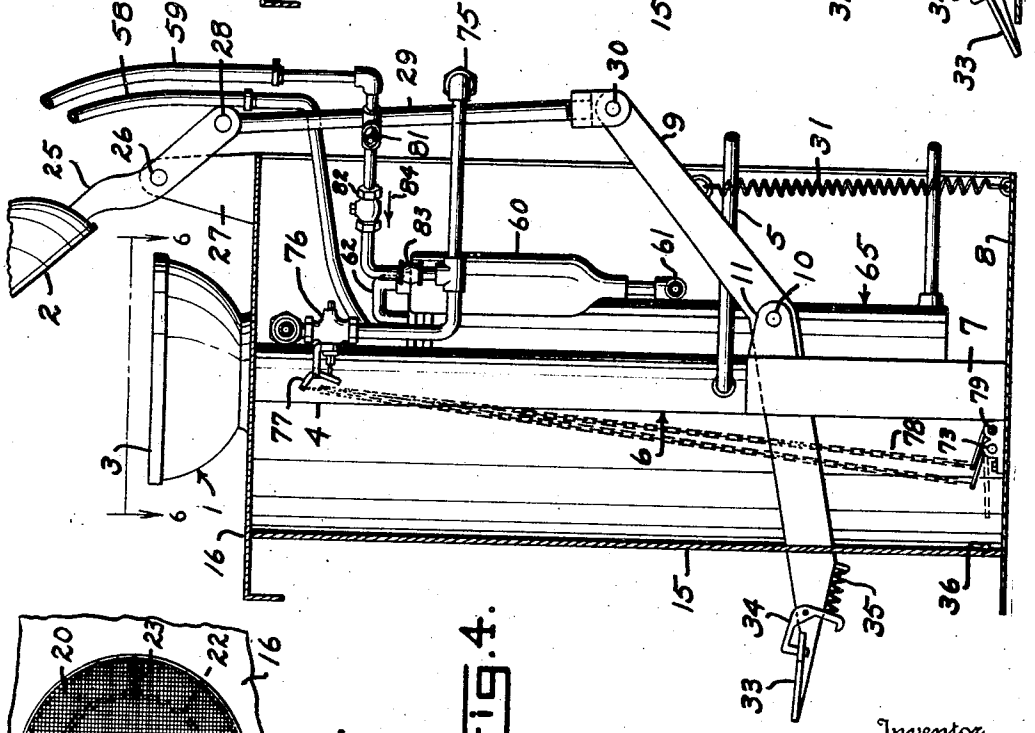


Fig. 4.

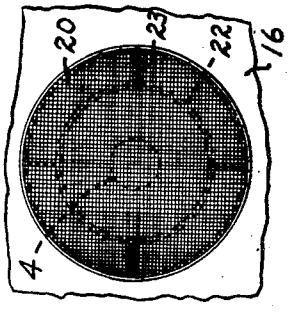


Fig. 6.

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2,437,478

GARMENT CLEANING MACHINE

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Application July 30, 1942, Serial No. 452,828

3 Claims. (Cl. 68—20)

1

The invention relates to spotting of fabrics, and more particularly to method and apparatus for expeditiously and effectively removing spots from fabric.

The principal object of the invention is to simply and effectively spot fabrics without the production of color gradations indicating the spotted area.

Another object of the invention is to spot fabrics by means of a suitable solvent and the immediate removal of excess solvent from the fabric by the passage of a drying fluid therethrough.

Another object of the invention is to segregate an area to be cleaned by forming a seal with the fabric thereabout and then successively passing solvent and drying fluids through the fabric to remove the spot and dry the area subjected to the solvent.

Another object is to provide a device which supplies dry heated air through the fabric to effect complete removal of the solvent therefrom.

A further object of the invention is to provide a spotting head which segregates an area to be treated by a solvent and an annular area thereabout so that feathering action between the areas may be effected after release of the fabric within the head.

Still another object is to provide a device in which the solvent and drying fluids are uniformly forced through a predetermined confined area of the fabric so that all harmful substances are removed from the area.

It is also an object to provide a spotting device in which either automatic or manual spotting may be carried out.

The foregoing are primary objects and will, together with other objects, be more fully apparent from the following description considered in connection with the accompanying drawings in which:

Fig. 1 is a rear elevational view partly in section showing an embodiment of the invention;

Fig. 2 is a plan view of the device shown in Fig. 1;

Fig. 3 is a plan view of the device with the table portion removed;

Fig. 4 is a sectional view taken on line 4—4 in Fig. 3;

Fig. 5 is a sectional view taken on line 5—5 in Fig. 3;

Fig. 6 is a sectional view taken on line 6—6 in Fig. 4;

Figs. 7 and 8 are respectively plan and elevational views of the nozzle assembly within the upper bowl of the spotting head.

2

Referring more specifically to the drawings, an embodiment of mechanism for practicing the invention comprises a spotting head 1 including an upper bowl 2 and a lower bowl or basin 3. The lower bowl terminates at its bottom in a drain 4 having an outlet at its lower end. This drain is a portion of a composite support 6 which includes downwardly extending bifurcations or legs 7 resting upon the base 8 so that a support is provided for the bowl 3 and for a foot-operated lever 9 mounted upon a pivot 10 through the ears 11 on the legs 7.

A housing 15 which is generally U-shaped in cross section also rests upon the base 8 and extends upwardly about the support 6. This housing serves as a support for the table 16 which provides an area for supporting portions of the fabric from which spots are to be removed and which also facilitates the carrying out of supplemental cleaning operations without the necessity of transferring the work from the device. The end portion 17 of the table 16 is shown as provided with a superposed layer of vitreous or similar material 18 to provide a working area which is unaffected by solvents or temperatures used in cleaning operations.

The lower bowl 3 has a foraminous material 20, such as a fine mesh screen, stretched across its upper surface to serve as a support for the fabric to be cleaned. A support 21 is secured within the bowl 3 and engages the lower surface of the material 20. This support comprises an annular strip or ring 22 secured to webs 23 which are in turn secured to the inner walls of the bowl 3, whereby there is provided an inner circular area and a surrounding annular area beneath the foraminous material 20 to serve a purpose that will more fully appear.

The upper bowl 2 is attached to a pair of arms 25 pivotally mounted on a pin 26 which passes through ear 27 extending upwardly from the table 16. The outer ends of the arms 25 are attached through pivot member 28 to link 29 of which the opposite end is connected through pivot 30 to the foot-operated lever 9 which is constantly urged in a clockwise direction, as viewed in Figs. 4 and 5, by spring 31 attached to the lever 9 and the base 8.

The opposite end of the lever 9 passes through a slot 32 in the housing 15 and terminates in a tread 33 which includes an L-shaped latch member 34 urged by a spring 35 toward engagement with a latch ear 36 in the housing 15 at the lower end of the slot 32 therein. It seems apparent that depression of the lever 9 by the oper-

ator to latching position, as shown in Fig. 5, moves the upper bowl 2 downwardly so that the sealing ring 40 thereon sealably engages the periphery of the lower bowl 3.

The arms 25 to which the upper bowl is attached extend to the interior thereof and support an inner bowl or head 41 of special construction. This head comprises a disc 42 of substantially the same diameter as the ring 22 within the lower bowl. The periphery of the disc 42 carries a seal ring 43 which moves into engagement with the foraminous material 20, or the fabric therebetween, to effect a seal therewith at the same time that the sealing ring 40 on the upper bowl 2 engages the periphery of the lower bowl 3.

As best seen in Figs. 7 and 8, a V-shaped conduit 50 is secured to the upper face of the disc 42 and the bore thereof terminates at its lower end in a nozzle 51 on the lower surface of the disc 42. This nozzle is convex downwardly and is slotted transversely at 52 in a plurality of directions so that fluids introduced thereto are distributed uniformly throughout the chamber which is formed between the head 41 and the fabric sealably engaged thereby.

Each branch of the V-shaped conduit 50 is provided with a push type valve 53 operable by the bar 54 attached to the rod 55 which is reciprocable in the manner indicated by the arrow 56 in Fig. 7. The rod 55 extends outwardly from within the upper bowl 2 and has a lever 57 at its upper end to produce the above indicated reciprocation of the rod so that one or the other of the valves 53 may be manually operated. As will more fully appear, movement of the lever 57 to the left, as shown in Fig. 2, serves to admit a drying fluid through conduit 58 to the interior of the upper bowl 2; whereas, movement of the lever to the right admits a suitable solvent through the conduit 59 to the interior of the upper bowl.

While any suitable solvent or drying fluid may be used in accordance with the invention, we prefer that water will be admitted for dissolving the spotting material and that dry heated air be supplied for drying the fabric which has been subjected to the action of the solvent. It is to be understood that other fluid may be used, and it is intended that any reference herein specifically to steam, water or air shall comprehend the use of any suitable fluid whether for dissolving the spotting material or for drying the fabric after the solvent has been applied.

Mounted within the housing 15 is a moisture trap 60 into which air under pressure passes from the inlet pipe 61. This trap is designed in accordance with conventional practice to remove moisture from the air during its passage to the conduit 62 connected to heating coil 63 within the casing 64 of an air heater which is referred to generally as 65.

The opposite end of the heating coil 63 is connected directly to the conduit 58, to which reference has already been made, and also to a valve 66 which controls the flow of heated air through pipe 67, hose 68 and nozzle 69. Valve 66 is controlled by means of a lever 70 operatively connected through chain 71 to a lever 72 on rock shaft 73 which extends outwardly from within the housing 15 and is provided with a foot pedal 74 exteriorly of the housing.

A steam inlet pipe 75 at the rear of the device is connected to the upper end of the air heater 65 to introduce steam thereto so that air passing through the coil 63 is heated. The steam line 75 is also connected to a valve 76 of the push type which is controlled by the lever 77 and chain 78 operatively connected to a second rock shaft 79 operable by pedals 80 at opposite sides of the housing 15. This construction enables the introduction of steam to the hose 68 and nozzle 69 from either side of the device so that supplemental cleaning operations may be carried out at any location on the table 16.

As best seen in Figs. 3 and 4, a solvent line 81 is connected to the conduit 59 leading to the spotting head 1 and it is intended that the solvent shall be supplied under some pressure usually in excess of the steam pressure supplied to the steam line 75. The solvent line 81 is also connected through a check valve 82 and valve 83 to the steam line 75. The check valve 82 permits movement of fluid in the direction indicated by the arrow 84, and valve 83 can be adjusted to control the rate of this flow so that a desired amount of water or other solvent may be admitted to the steam pipe and thence through the valve 76 and the hose 68 to the nozzle 69.

The operation of the disclosed embodiment of the invention is believed to be apparent from the foregoing description. By way of summary, it will be pointed out that a piece of fabric from which a spot is to be removed will be placed upon the lower bowl 3 whereupon the pedal 33 will be depressed to the position shown in Fig. 5 so that the upper bowl moves downwardly and seals are provided between the rings 40 and 43, and the lower bowl 3 and the ring 22, respectively.

It is to be understood that, as described, a suitable solvent is supplied under pressure to the line 81. The lever 57 is then moved to the right, as viewed in Fig. 2, to admit a quantity of solvent to and through the area of fabric segregated within the seal ring 43. This solvent moves downwardly through the bowl or basin 3 and into the drain 4.

After a sufficient amount of solvent has been admitted through the conduit 59, the lever 57 is then moved in the opposite direction so that heated dry air is admitted through the conduit 58 to the segregated area of the fabric. Such air, in passing through the fabric, removes the major portion of the solvent remaining in the fabric and also assures that no drops of solvent will fall from the nozzle 52 and upon the fabric when the bowl 2 is lifted. The upper bowl 2 may then be lifted whereupon, if desired, steam or heated air may be supplied through the nozzle 68 to the fabric overlying the screen 20 to complete the drying of the fabric. Such application of steam or air also produces a feathering action so that any tendency for appearance of a line of demarcation between the area subjected to the solvent and the surrounding area will be eliminated.

In event it is desired to supply a small quantity of water or other solvent to the steam admitted through the valve 76, the valve 83 may be opened any desired extent and in this manner any desired amount of solvent may be provided, a feature particularly desirable for supplemental spotting operations.

An important feature of the invention resides in the construction whereby inner and outer seals are provided to segregate the area to be spotted. This construction and the procedure used serves a dual function. First, the fabric is held taut during the cleaning and drying operations and shrinking is prevented, and second,

feathering may be effected without removal of the fabric from the head by utilization of either steam, a solvent-containing or moist steam, or heated dry air from nozzle 69 after the upper bowl has lifted from engagement with the fabric. Broadly, the invention comprehends a method and apparatus for expeditious and effective spotting of fabrics in a manner that the color and texture thereof are preserved.

What is claimed is:

1. In a device for removing spots from fabric, a bowl having a foraminous material thereon to support the fabric to be cleaned, an annular inner support for said material disposed within said bowl beneath said material, a second bowl having outer and inner portions adapted to engage and seal with the first bowl and said support respectively, means for flushing a cleaning fluid through the inner portion of the fabric, means for lifting said second bowl to break the seals with the fabric, and means for thereafter flushing a drying fluid through the inner portion of the second bowl to pass through the fabric with a feathering action about the area of the inner seal.

2. In a device for removing spots from fabric, a bowl having a foraminous material thereon to support the fabric to be cleaned, an annular inner support for said material disposed within said bowl beneath said material, a second bowl having outer and inner portions adapted to engage and seal with the first bowl and said support respectively, means for flushing a cleaning fluid through the inner portion of the fabric,

means for lifting at least the inner portion of said second bowl to break the inner seal, and means for thereafter flushing a drying fluid through said inner portion of the second bowl to pass through the fabric with a feathering action about the area of the inner seal.

3. In a device for removing spots from fabric, a bowl, an annular support therein, a foraminous member extending across the bowl and support to receive an area of the fabric to be treated, an inverted bowl including an inner head for introducing a solvent and a drying fluid to the interior thereof, means for moving the inverted bowl toward and from said first mentioned bowl, and means comprising the lowermost edge of the inner head and the annular support forming an annular seal about an area of the fabric inwardly from the periphery of the bowls.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
927,549	Kezer	July 13, 1909
1,531,501	Popkin	Mar. 31, 1925
2,009,365	Wait	July 23, 1935
2,058,632	Riebel, Jr., et al.	Oct. 27, 1936
2,254,691	MacLelland	Sept. 2, 1941
2,279,984	Goodwin	Apr. 14, 1942
2,301,227	Pickett, Jr., et al.	Nov. 10, 1942