

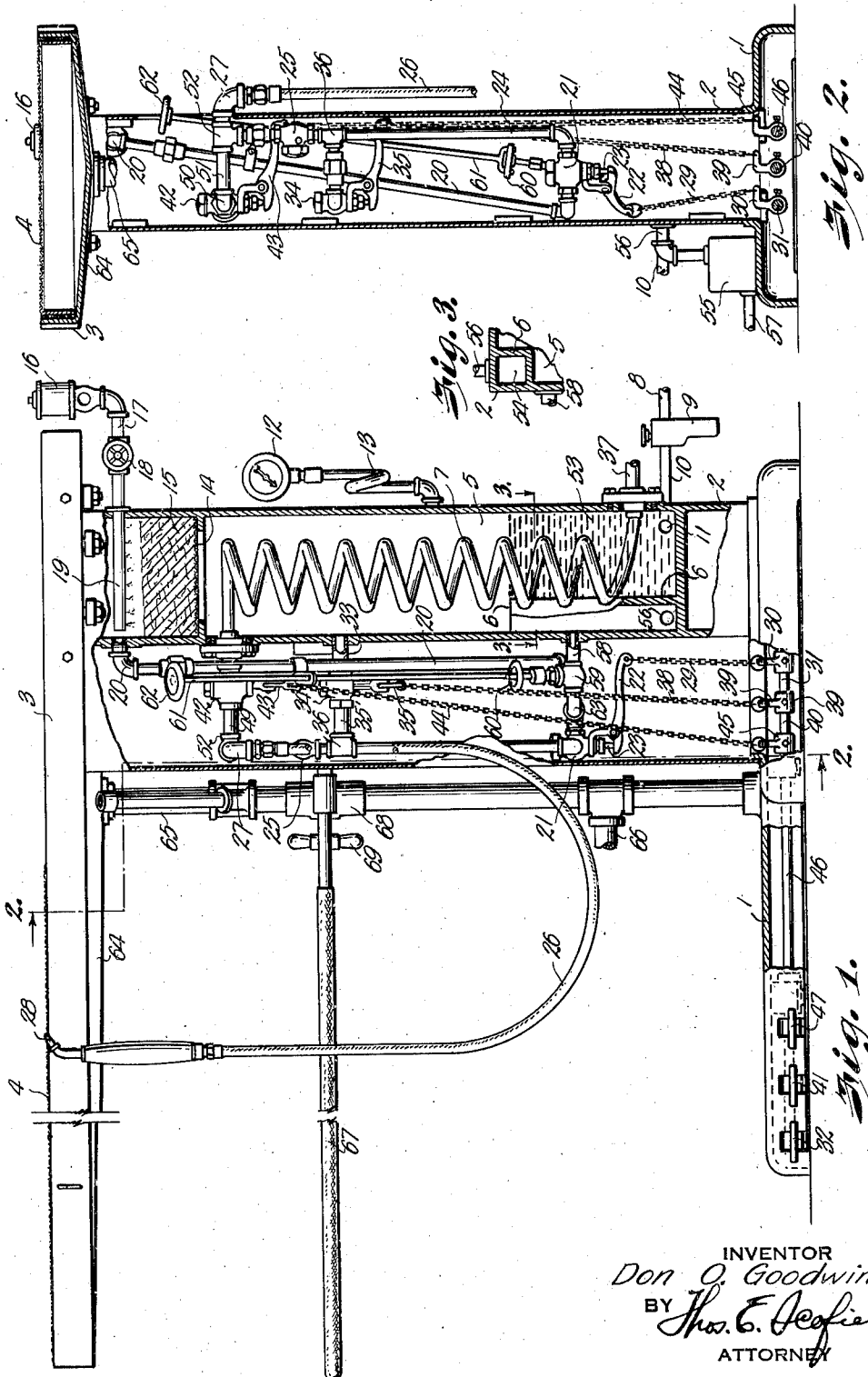
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D. O. GOODWIN

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SPOTTING BOARD

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INVENTOR
Don O. Goodwin
BY *Thos. E. Deafield*
ATTORNEY

UNITED STATES PATENT OFFICE

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SPOTTING BOARD

Don O. Goodwin, St. Louis, Mo.

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6 Claims. (Cl. 68—5)

My invention relates to a spotting board, and more particularly to a device for removing stains and spots from clothing in dry cleaning establishments.

This application is a continuation-in-part of my co-pending application, Serial No. 310,320, filed December 21, 1939, which has since been abandoned.

In a dry cleaning establishment clothes are subjected to the action of a dry cleaning solvent such as a hydrocarbon known as "Stoddard's" solvent, carbon tetrachloride, and the like. These organic solvents will dissolve most oily or greasy stains, but do not touch water soluble stains and certain spots which are neither oil soluble or water soluble, such as iodine stains, rust spots, ink spots, etc.

In the conventional dry cleaning practice, the garment is first dry cleaned and then passed to a "spotter" who treats the spots which are not removed by the dry cleaning process with various chemicals to attempt to remove them. The methods employed frequently damage the fabric or discolor it so that while the finished result is better than that which exists with the spot present, it still leaves much to be desired.

One object of my invention is to provide a novel apparatus for removing spots from fabrics.

Another object of my invention is to provide a novel apparatus for quickly, conveniently and expeditiously removing spots from fabrics without injury to the same.

Other and further objects of my invention will appear from the following description.

In the accompanying drawing which forms part of the instant specification and which is to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views:

Fig. 1 is a side elevation partly in section showing a spotting board embodying my invention.

Fig. 2 is a sectional view taken on the line 2—2, Fig. 1.

Fig. 3 is a fragmentary sectional view taken on the line 3—3, Fig. 1.

My invention revolves around apparatus capable of producing a controlled supply of a novel detergent, namely, soap impregnated steam. The action of the soap-charged steam is physical and mechanical, but it enables me to rapidly and expeditiously remove spots heretofore removable only with much labor and some injury to the fabric. I have, for example, been able to remove an iodine spot within four sec-

onds. I have permitted "Le Page's" glue to dry on fabric to such an extent that if the fabric were bent it would break the fibers. I have removed this dried glue spot within five seconds by means of my apparatus.

Referring now to the drawing, my apparatus comprises essentially a base member 1 provided with a standard 2, supporting a spotting board 3. The spotting board may be of any suitable construction which will permit the passage of steam and hot air therethrough. I prefer to use a Monel metal wire cloth 4 to form the working surface of the spotting board. Integral with the standard 2 is a chamber 5. The lower portion of the chamber is fitted with a baffle 6 acting as a stand-pipe, as will be hereinafter more fully pointed out.

A heat exchange coil 7 runs through the chamber 5, as can readily be seen by reference to Fig. 1. Steam from any suitable source and at elevated pressure is admitted to pipe 8, which communicates with a reducing valve 9. The reducing valve is set to a predetermined pressure, preferably in the neighborhood of 50 pounds per square inch. The steam at controlled pressure leaves the reducing valve 9 through pipe 10, which communicates with the lower portion of the chamber 5 through port 11. A pressure gauge 12 communicates with the interior of chamber 5 through pipe 13.

A porous partition, such as a wire screen 14, is positioned adjacent the upper end of the chamber 5. The screen 14 supports cotton toweling or other suitable padding, 15. The padding 15 is adapted to be impregnated with a soap or other suitable soap-like detergent, by flow from soap container 16, through pipe 17, past valve 18, through perforated distribution pipe 19. The padding 15 is thus soaked or impregnated with the detergent or soapy material.

A pipe 20 communicates with the chamber 5 above the soap impregnated padding 15. The pipe 20 passes downwardly and communicates with a valve 21. The valve 21 is the self-shutting type adapted to be opened by a lever 22 acting upon valve stem 23.

The discharge of the valve 21 communicates with a flexible hose 26 by means of pipe 24, check valve 25 and elbow 27. The flexible hose 26 terminates in a nozzle 28. It will be seen that whenever valve 21 is opened steam will flow from the chamber through the soap impregnated padding through pipe 20, valve 21, pipe 24, check valve 25, elbow 27, hose 26 to the nozzle 28.

The lever 22 is connected by chain 29 to a

bell crank lever 30 which is secured to a shaft 31. The shaft 31 extends underneath the base 1. To the shaft 31 is secured a foot pedal 32.

A pipe 33 communicates with the interior of chamber 5 and to the inlet port of a valve 34, which is controlled by a lever 35. The discharge port of valve 34 is connected by pipe 35' to a T 36, which communicates with pipe 24 below the check valve 25. It will be seen that whenever valve 34 is opened steam from below the soap impregnated pad 15 will pass through the valve 34, through pipe 35', through T 36, through check valve 25, through elbow 27, to the flexible conduit 26, to the nozzle 28. A chain 38 is connected to the lever 35 and to a bell crank lever 39 secured to a shaft 40. The shaft 40 runs under the base 1. A pedal 41 is secured to the shaft 40 so that upon depression of the pedal 41 the shaft 40 will be rotated to rotate the bell crank lever 39 to open valve 34 through its operating lever 35 and the chain 38.

The coil 7 communicates with a source of compressed air, preferably at a pressure between 100-150 lbs., through pipe 37. The outlet of the coil 7 is controlled by a valve 42, which is operated by a lever 43. The lever 43 is connected by a chain 44 to a bell crank lever 45 secured to a shaft 46. The shaft 46 runs under the base 1. A pedal 47 is connected to the shaft 46 so that whenever the pedal 47 is operated the shaft 46 will rotate to rotate bell crank lever 45 to open the valve 42 through chain 44 and the operating lever 43. The outlet port of valve 42 is connected by pipe 49 to an elbow 50. The elbow 50 communicates through pipe 51 to T 52 which communicates with the elbow 27. It will be seen that whenever valve 42 is operated, air under pressure will flow through heat exchange coil 7, through valve 42, through pipe 49, through elbow 50, through pipe 51, through T 52, through elbow 27, through flexible conduit 26, to nozzle 28.

The heat exchange coil serves a double purpose. Not only is the air passed through it heated, but the removal of heat from the steam within the chamber 5 will condense some of it so that the steam within the chamber will be kept at a point of saturation and will contain mechanically entrained droplets of water.

Condensation within the chamber 5 will occur due to loss of heat through the chamber walls and through heat exchange with air in coil 7. The condensate 53 will collect in the bottom of the chamber 5 and finally overflow at the top of baffle 6 through passage 54 formed by the baffle 6 and the walls of the chamber 5. The bottom of passage 54 communicates with a steam trap 55 through pipe 56, and excess condensate is withdrawn from the steam trap 55 through pipe 57. A pipe 58 communicates with chamber 5 below the top of the baffle 6, as can readily be seen by reference to Figs. 1 and 3. The pipe 58 is controlled by valve 59 provided with a handle 60, operated by an extension rod 61, provided with a handle 62.

The outlet of valve 59 communicates with pipe 20 by means of pipe 63. The connection is made with pipe 20 just before pipe 20 is attached to the inlet of valve 21. The arrangement is such that when valve 21 is opened and soap-saturated steam flows down through pipe 20, it will induce a flow of water of condensation into the stream of steam and super-saturate it with water. The wetness of the steam, that is, the amount of entrained water that is drawn into the steam is controlled by opening valve 59. When valve 59

is closed, no water will flow into the soap-laden steam. The spotter operating my spotting board can control the amount of water by operating valve 59 through the extension rod handle 62.

It will be noted that port 11 is below the level of the condensate 53 so that the incoming steam must bubble up through the body of condensate thus further aiding wetting the steam which flows through the soap-saturated padding 15.

A drain pan 64 is placed under the Monel metal wire cloth 4 of the spotting board surface, so that the steam flowing through the fabric being treated may condense. This condensate flows through a drain pipe 65 and outwardly through a pipe 66 to a suitable disposal connection. The drain pipe 65 also acts to support a work guard 67, which is adjustably positioned by means of a clamp 68. The handle 69 may be operated to secure the clamp at a desired height on the pipe 65. The guard 67 supports the remaining portion of the garment and prevents it from becoming soiled by touching the floor of the establishment in which my spotting board assembly is situated.

In operation, the chamber 16 is filled with a suitable soap or detergent solution and the valve 18 opened to permit it to flow to the padding 15. High pressure steam is supplied to pipe 8 and the pressure within the chamber 5 is checked by gauge 12. It is assumed that sufficient condensate is present in the chamber 5 from previous use. The garment to be spotted is placed over the spotting board with the spot on the Monel metal screen surface. The nozzle is held immediately above the spot and the foot pedal 32 is depressed. This opens valve 21 and permits soap-laden steam to act upon the spot. The amount of moisture in the steam has been previously governed to that desired by adjustment of the valve 59. Changes in the adjustment may be made if it is desired to use a wetter or drier steam, as the case may be.

After the spot has been removed, there will be a slight amount of moisture remaining on the garment. The foot pedal 47 is then depressed and this opens valve 42, permitting the air under pressure and heated by the heat exchange coil 7 to evaporate the moisture. Usually this is sufficient to remove all traces of the spot. In cases where the spot is old or of a particularly resistant nature, it may be necessary to repeat the treatment. Sometimes with certain fabrics a slight amount of dried soap will remain on the garment. When this occurs the foot pedal 41 is depressed, permitting clear steam to flow through the soap deposit, washing it away. This treatment will in turn leave a slight amount of moisture at the spot and this is dried by again pressing foot pedal 47, permitting the hot air to evaporate the moisture which is left.

It will be observed that the soap-laden steam, the clear steam and the hot air all pass out of flexible conduit 26 on nozzle 28. This precludes any water of condensation collecting in the flexible conduit since the hot air is always used last, evaporating any traces of moisture which remain in the flexible conduit. If separate conduits were used the steam remaining in the conduit would condense between spotting operations with the result that a slug of water would be ejected which might ruin a garment susceptible to water, such as a fine evening dress or the like.

It will be seen that I have accomplished the objects of my invention. I have provided a spotting board enabling spots to be removed in a sim-

ple, expeditious and convenient manner, without injury to the finest fabric. The amount of moisture in the soap-laden steam can be readily controlled by the valve 59, and it is to be understood, of course, that in garments susceptible to injury by excessive moisture, the valve 59 may be closed completely. The arrangement is such that the passing of the steam through the body of condensate and the positioning of the heat exchange coil within the steam chamber is sufficient to cause the steam to be wet enough to become properly impregnated with the detergent solution in the padding through which it must flow. The reducing valve 9 maintains a predetermined pressure within the chamber 5 at all times.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, I claim:

1. A spotting board for removing spots from fabrics, including in combination, a housing, a reducing valve, means for introducing steam under pressure to said reducing valve, means providing communication between the outlet of said reducing valve and said housing, a stand-pipe within said housing adapted to permit the collection of condensate within said housing to a predetermined level, said means providing communication between said reducing valve and said housing communicating with said housing below the top of said stand-pipe whereby incoming steam at reduced pressure will bubble through said body of condensate within said housing, a heat exchange coil positioned within said housing, means for introducing air under pressure for passage through said heat exchange coil, a flexible conduit, a nozzle at the end of said flexible conduit, means providing communication between said flexible conduit and said heat exchange coil, a valve for controlling said communicating means, absorbent material supported above said stand-pipe within said housing, said absorbent material being impregnated with a detergent, a steam outlet from said housing above said detergent impregnated absorbent material, means providing communication between said steam outlet and said flexible conduit, and a second valve for controlling said steam outlet.

2. A spotting board for removing spots from fabrics, including in combination, a housing, a reducing valve, means for introducing steam under pressure to said reducing valve, means providing communication between the outlet of said reducing valve and said housing, a stand-pipe within said housing adapted to permit the collection of condensate within said housing to a predetermined level, said means providing communication between said reducing valve and said housing communicating with said housing below the top of said stand-pipe whereby incoming steam at reduced pressure will bubble through said body of condensate within said housing, a heat exchange coil positioned within said housing, means for introducing air under pressure for passage through said heat exchange coil, a flexible conduit, a nozzle at the end of said flexible conduit, means providing communication between said flexible con-

duit and said heat exchange coil, a valve for controlling said communicating means, absorbent material supported above said standpipe within said housing, said absorbent material being impregnated with a soap, a steam outlet from said housing above said soap impregnated absorbent material, means providing communication between said steam outlet and said flexible conduit, a second valve for controlling said steam outlet, a soap reservoir, a pipe providing communication between said soap reservoir and said housing above said absorbent material, and a valve controlling said soap pipe.

3. A spotting board for removing spots from fabrics, including in combination, a housing, a reducing valve, means for introducing steam under pressure to said reducing valve, means providing communication between the outlet of said reducing valve and said housing, a stand-pipe within said housing adapted to permit the collection of condensate within said housing to a predetermined level, said means providing communication between said reducing valve and said housing communicating with said housing below the top of said stand-pipe whereby incoming steam at reduced pressure will bubble through said body of condensate within said housing, a heat exchange coil positioned within said housing, means for introducing air under pressure for passage through said heat exchange coil, a flexible conduit, a nozzle at the end of said flexible conduit, means providing communication between said flexible conduit and said heat exchange coil, a valve for controlling said communicating means, absorbent material supported above said stand-pipe within said housing, said absorbent material being impregnated with a detergent, a steam outlet from said housing above said detergent impregnated absorbent material, means providing communication between said steam outlet and said flexible conduit, a second valve for controlling said steam outlet, a second steam outlet pipe providing communication between said housing below said detergent impregnated absorbent material and said flexible conduit, and a third valve for controlling said second steam outlet pipe.

4. A spotting board for removing spots from fabrics, including in combination, a housing, a reducing valve, means for introducing steam under pressure to said reducing valve, means providing communication between the outlet of said reducing valve and said housing, a stand-pipe within said housing adapted to permit the collection of condensate within said housing to a predetermined level, said means providing communication between said reducing valve and said housing communicating with said housing below the top of said stand-pipe whereby incoming steam at reduced pressure will bubble through said body of condensate within said housing, a heat exchange coil positioned within said housing, means for introducing air under pressure for passage through said heat exchange coil, a flexible conduit, a nozzle at the end of said flexible conduit, means providing communication between said flexible conduit and said heat exchange coil, a valve for controlling said communicating means, absorbent material supported above said standpipe within said housing, said absorbent material being impregnated with a detergent, a steam outlet from said housing above said detergent impregnated absorbent material, means providing communication between said steam outlet and said flexible

conduit, a second valve for controlling said steam outlet, a water pipe providing communication between said body of condensate and said steam outlet pipe, a valve for controlling said water pipe, the construction being such that when steam is flowing through said steam outlet pipe a flow of condensate from said body of condensate to the outflowing steam will be induced whereby to produce a steam having a greater moisture content.

5. In a spotting board, a base, a standard supported by said base, said standard forming a housing, a stand-pipe within said housing, a steam trap, means providing communication between said stand-pipe and said steam trap, a reducing valve, a pipe providing communication between a source of steam under pressure and said reducing valve, means providing communication between said reducing valve and said housing below the top of said standpipe, a heat exchange coil extending through said housing, means providing communication between a source of compressed air and one end of said heat exchange coil, a flexible conduit, a nozzle at one end of said flexible conduit, means providing communication between the other end of said flexible conduit and the heat exchange coil,

a valve for controlling said communicating means, a steam outlet pipe from said housing above said stand-pipe, means providing communication between said steam outlet pipe and said flexible conduit, a valve for controlling said steam outlet pipe.

6. A spotting board including in combination a housing, a stand-pipe within said housing, a steam trap communicating with said stand-pipe, said stand-pipe being adapted to maintain a body of condensate of predetermined level within said housing, means for introducing steam into said body of condensate, permeable supporting means within said housing above the standpipe, steam permeable absorbent material supported on said supporting means, means for impregnating said permeable material with a detergent, a steam outlet pipe from said housing above said supporting means, the construction being such that wet detergent-laden steam will be withdrawn from said housing, a flexible conduit, means providing communication between said steam outlet pipe and said flexible conduit, and a valve for controlling said communicating means.

DON O. GOODWIN.