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2,598,571

DRY CLEANING APPARATUS

Filed June 2, 1948

3 Sheets-Sheet 1

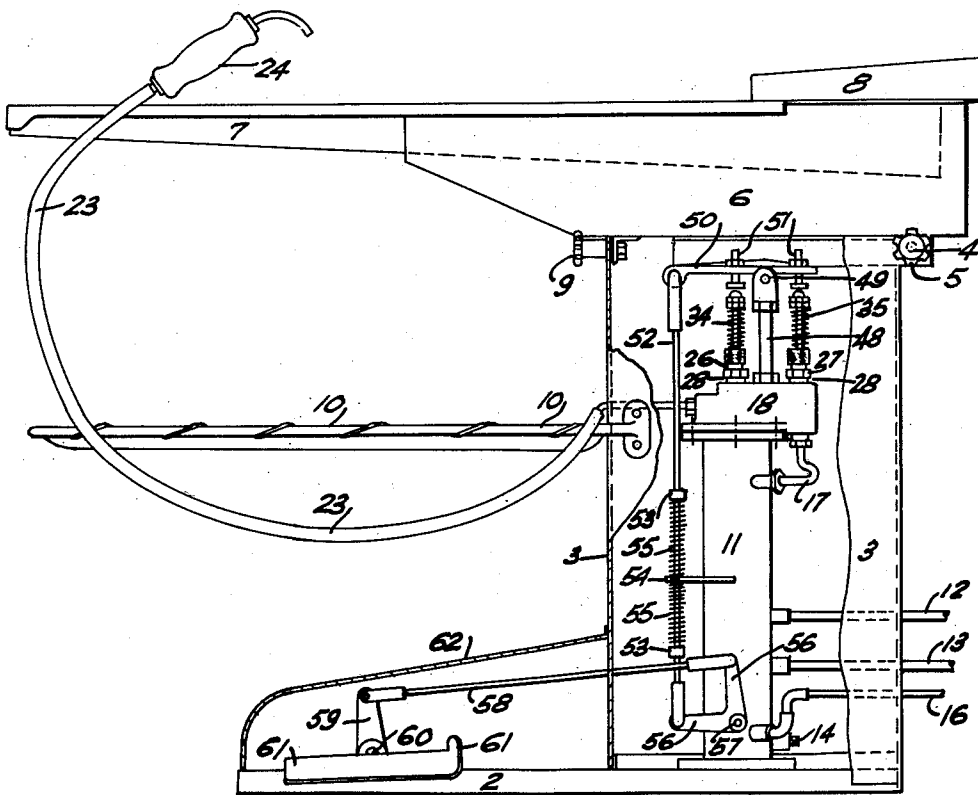


Fig. 1.

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3 Sheets-Sheet 3

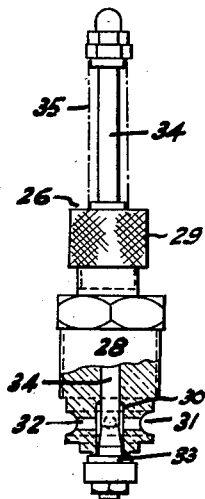


Fig. 5.

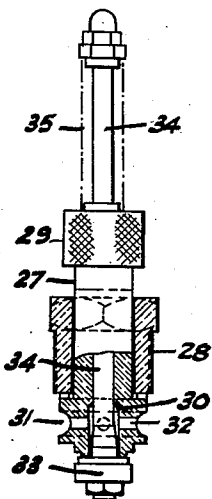


Fig. 6.

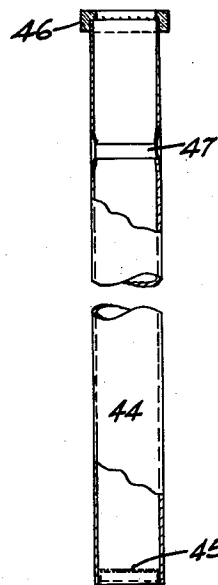


Fig. 9.

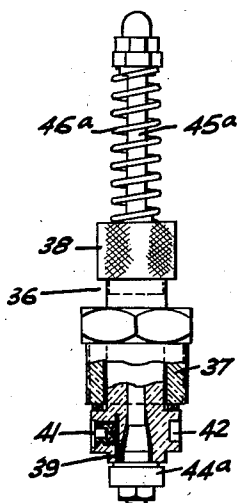


Fig. 8.

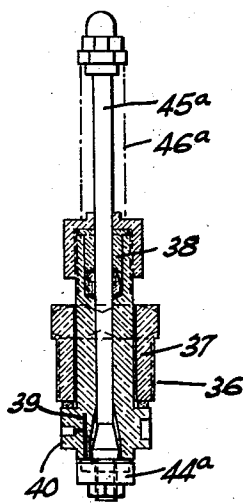


Fig. 7.

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UNITED STATES PATENT OFFICE

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DRY CLEANING APPARATUS

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1 Claim. (Cl. 299—84)

1

This invention relates to apparatus for dry cleaning clothes and the like, and particularly to apparatus of the type consisting of an upright cylindrical chamber associated with a horizontal platen, spotting board or table and having a plurality of valves controlled by foot pedals for the purpose of supplying wet or dry steam, hot water condensed from the steam, or hot air, as required, to the garment or article being treated. In apparatus of the kind referred to the arrangement of the valves and the construction of the apparatus generally is such that considerable time is involved in dismantling it for repairs and maintenance, in effecting the renewal of parts and in re-assembling.

The object of this invention is to provide an improved apparatus wherein the various parts are accessible and easily and quickly dismantled for repairs and maintenance and re-assembled without difficulty. The invention also has for its object to provide control valves which do not require dismantling of the apparatus before they become accessible and which reduce the spare parts required. In apparatus of the kind referred to, further, a screen or filter is provided through which the condensate or water condensed from the steam passes. In prior apparatus this screen has been inaccessible and difficult to remove. Another object of the present invention is to provide for the easy removal of the condensate screen, when necessary. Still further, the condensate or water jet of the apparatus has been located, hitherto, within the cylindrical steam chamber of the machine necessitating the dismantling of the apparatus should the jet require attention. Another object of the invention is to provide a water jet which may be quickly and easily removed and cleaned, renewed or otherwise attended to without dismantling other parts or displacing them to any material extent.

According to the invention the general arrangement of the dry cleaning machine may remain substantially as at present, i. e., the upright cylindrical steam chamber, foot pedals and spotting board are functionally unaffected, but in lieu of the existing arrangement of valves a valve unit is removably fitted to the top of the chamber and contains separate but structurally similar valves in appropriate communication with the cylindrical chamber and in communication with a common passage in the unit, terminating in the operator's hand gun. The valves are all removable externally of the apparatus without difficulty and are operated by a foot pedal, and the condensate screen also may be removed without difficulty externally of the apparatus.

2

Referring to the drawings:

Figure 1 is a side elevation of an apparatus according to the invention;

Figure 2 is a cross sectional plan of a valve box, taken on line A—A, Figure 3;

Figure 3 is an enlarged part sectional elevation of the steam chamber, valve box and appurtenant parts of an apparatus according to the invention;

Figure 4 is a cross section of the apparatus seen in Figure 3;

Figure 5 is an enlarged part sectional elevation of a steam control valve according to the invention;

Figure 6 is an enlarged part sectional elevation of a hot air valve according to the invention;

Figure 7 is an enlarged part sectional elevation of a water control valve according to the invention;

Figure 8 is an enlarged part sectional elevation of a modified water control valve, and

Figure 9 is an enlarged sectional elevation of a condensate water tube used in conjunction with the water control valve.

The invention includes a base plate 2 having an upstanding framework 3 equipped at one side of its upper end with a hinge pin 4 having a clamping hand nut 5. Hinged to the pin 4 is a top structure 6 having a front tray 7 and a rear tray 8 for the use of the operator. The structure 6 is retained closed or secured against inadvertance by an appropriate hand locking nut 9. Below the structure 6 and outstanding from the framework 3 is a platen 10 adapted to receive the garment to be cleaned.

Upstanding from the base 2, within the framework 3, is a cylindrical steam chamber 11 having a steam inlet 12 and a steam outlet 13. The latter may lead to an appropriate steam trap. The chamber 11 also is provided with a drain plug 14.

Within the steam chamber 11 is an upright hot air chamber 15 having an air inlet 16 connecting with an appropriate compressor and an air delivery pipe 17 communicating through the valve box hereinafter described with an appropriate hand gun also hereinafter described.

Removably mounted upon the top of the steam chamber 11 is a valve box 18 having therein a minor steam chamber 19, a minor water chamber 20 and a minor air chamber 21 all of which communicate with a common delivery passage 22 terminating in a hose pipe or flexible connection 23 equipped with any suitable hand gun 24. Mounted in the bottom of the minor steam chamber 19 is a removable steam jet 25. The use of

a removable steam jet 25 is believed to be novel in apparatus of the kind to which the invention relates and it enables different sizes of jet to be employed when necessary or desired.

Threaded into the minor steam chamber 19 is a steam control valve indicated at 26. Threaded into the minor air chamber 21 is a hot air control valve 27. The valves 26 and 27 are identical in construction and are interchangeable. Each valve comprises an externally threaded casing 28 having a packing gland and appropriate associated parts, indicated at 29, and an inlet chamber indicated at 30. The external wall of the chamber 30 is reduced in diameter as indicated at 31 and formed through the said wall is a plurality of delivery and distributing openings 32. The chamber is controlled by an appropriate valve 33 having a valve stem 34 passing through the packing gland 29 and provided with a helical control spring 35.

Threaded into or removably mounted in the minor chamber 20 is a hot water control valve indicated at 36. This valve comprises an externally threaded casing 27 having a packing gland and appropriate associated parts indicated at 38, and an inlet passage indicated at 39. The passage may communicate with an integral fixed jet 40 shown in Figure 10 or with a removable jet 41 as shown in Figure 11. The advantage of a removable jet is that in the event of a choke the choked jet may be quickly removed and replaced by another jet to save time. Formed in the water valve, opposite the jet thereof, is an adjustment recess 42 in which a set screw is accommodated. The inlet passage 39 is controlled by an appropriate valve 44a having a valve stem 45a passing through the packing gland 38 and provided with a helical control spring 46a.

Within the steam chamber 11 is an upright condensate water tube 44 having across its lower end a gauze or screen 45 and provided at its upper end with a reinforcing ring 46. Extending across the upper end of the tube 44 is a cross pin 47 by which it may be quickly and conveniently removed when necessary as will be hereinafter more fully understood. The upper end of the tube 44 is located in the minor water chamber 20 of the valve box 18, the ring 46 resting upon a circumferential shoulder in the said chamber. When the hot water control valve 36 is screwed into position its casing beds upon the top of the ring 46 and securely retains the tube 44 in position.

Mounted upon the valve box 18 is a pillar 48 having a removable pivot pin 49 to which is intermediately pivoted a rocking lever 50 carrying a plurality of adjustable tappets 51, one for each valve. Pivoted to one end of the lever 50 is the upper end of an upright connecting rod 52 having thereon two adjustable collars 53, an upper and a lower, located above and below an abutment 54 projecting from the wall of the chamber 11. Between each collar 53 and the abutment 54 and encircling the rod 52 is a helical spring 55. Pivotaly connected to the lower end of the connecting rod 52 is one arm of a bell crank lever 56. The lever 56 is mounted upon a pivot pin 57 outstanding from the wall of the chamber 11. Pivotaly connected to the other arm of the bell crank lever 56 is one end of a longitudinally disposed connecting rod 58 the other end of which is pivotaly connected to an arm 59 secured to a rocking arm 60. Intermediately pivoted by the rocking shaft 60 and mounted thereon is a foot

pedal 61. The rod 58, arm 59 and shaft 60 may be protected by an appropriate cover 62.

It will be obvious that steam admitted into the steam chamber 11 will raise the temperature of the air chamber 15 thereby generating a hot air supply and that hot water condensing from the steam will gather in the bottom of the chamber 11 and in the tube 44. Further, the pressure of the steam may be regulated in any suitable way such as by a control valve. The steam within the chamber 11 is, by comparison, "dry" steam and if delivered through the steam control valve 26 reaches the hand gun 24 of the operator as "dry" steam but, as will become more fully apparent hereafter, when the "dry" steam is delivered with hot water released through the water control valve 36 it, the steam, then becomes saturated or "wet" steam. The water delivery is effected through the condensate tube 44 under the pressure of the steam in the chamber 11. The pressure employed approximates 60 to 65 lbs. to the square inch. To operate the apparatus the garment to be cleaned is placed upon the platen 10. The operator presses down upon the outer end of the pedal 61 thereby operating the bell crank lever 56, connecting rod 52 and rocking lever 50. The relative tappet 51 depresses the valve stem of the steam valve 26 and a light or soft flow of steam takes place past the coned portion of the valve 33, through the openings 32, through the passage 22 in the valve box 18 to the hose 23 and hand gun 24. It will be appreciated that the flow of steam is restricted by the coned portion of the valve. By further depression of the pedal, however, the coned portion of the valve ceases to partially choke the entrance of the valve and the steam flows freely past the stem of the valve; the flow through the gun increases accordingly until the maximum is reached. By pre-adjustment of the tappets 51 the water valve 36 will be operated at a predetermined moment and under the pressure of the steam within the chamber 11 water will rise through the tube 44 and be discharged through the jet 40, 41. The steam and water sprays from the respective jets meet in the common passage 22 and the steam then is "wet" or saturated and it will stay "wet" as long as the pedal 61 is held in the position required. When the pedal 61 is released sufficiently the water control valve will cease to operate and the steam will become "dry" again. Release of the pedal 61 will cause the steam supply to be closed off. By slipping the foot to the inner end of the pedal 61 the rocking lever 50 is oppositely operated and causes the hot air valve 27 to be operated. This operates in the same way as the steam valve and it is structurally exactly the same as it. When the air valve is functioning the steam and water valves are closed. To obtain access to the valves and to the condensate tube for maintenance the locking nut 9 is released and the top structure 6 is swung back on its pivot pin 4. The pivot pin 49 is removed and the rocking lever 50 is swung back on the pivot at the top of the connecting rod 52. The valves 26, 27 and 36 now are exposed for removal. To remove the tube 44 it is necessary to first remove the valve 36; the tube then may be withdrawn by a hook or the like engaging with the cross pin 47. Obviously, the steam jet 25 may be removed with a screw driver or the like after the steam valve has been removed and be substituted by a jet of another size if desired.

I claim:

Dry cleaning apparatus comprising an upright cylindrical steam chamber having a hot air chamber and a removable hot water tube mounted therein, a valve box removably mounted upon the steam chamber, said box having formed therein a delivery passage and a minor steam chamber, a minor hot air chamber and a minor hot water chamber communicating respectively with the cylindrical steam chamber, the hot air chamber and the hot water tube therein and with the delivery passage, a removable steam jet mounted in the bottom of the minor steam chamber, a removable steam control valve mounted in the minor steam chamber, a removable hot air control valve mounted in the minor hot air chamber, a removable hot water control valve mounted in the minor hot water chamber, each of the valves upstanding above the valve box and being removable externally thereof, a hand gun communicating with the delivery passage, and a single removable rocker lever mounted upon

the box and having a plurality of adjustable tappets to engage the valves and actuate them to supply dry or wet steam or hot air to the hand gun through the delivery passage, as desired.

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