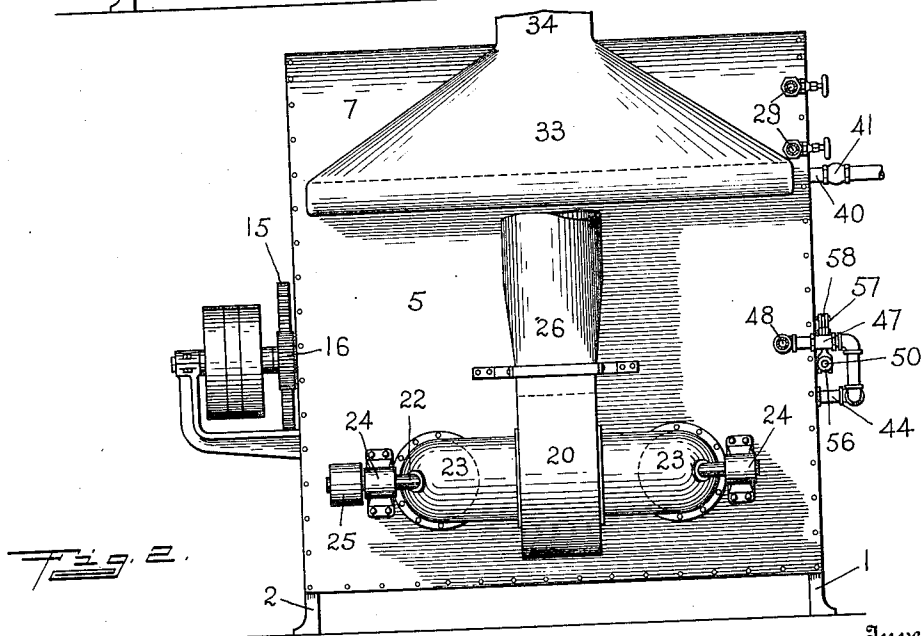
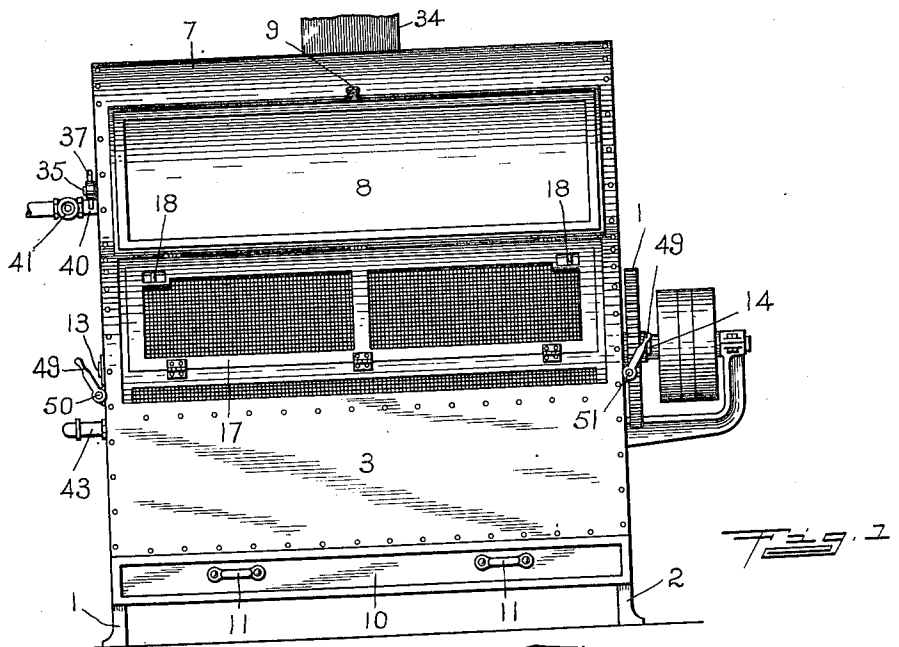


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 DRY CLEANING FUME EXTRACTOR.
 APPLICATION FILED MAR. 22, 1916.

Patented Sept. 18, 1917.
 2 SHEETS—SHEET 1.



S.S. Dresher, Inventor.

Witness:

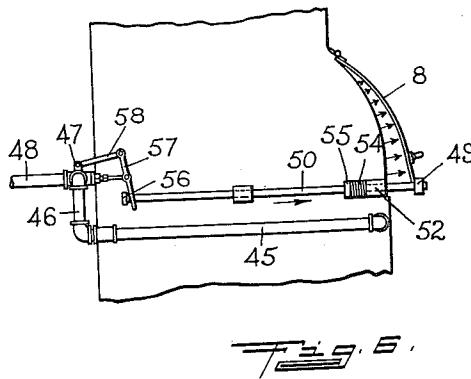
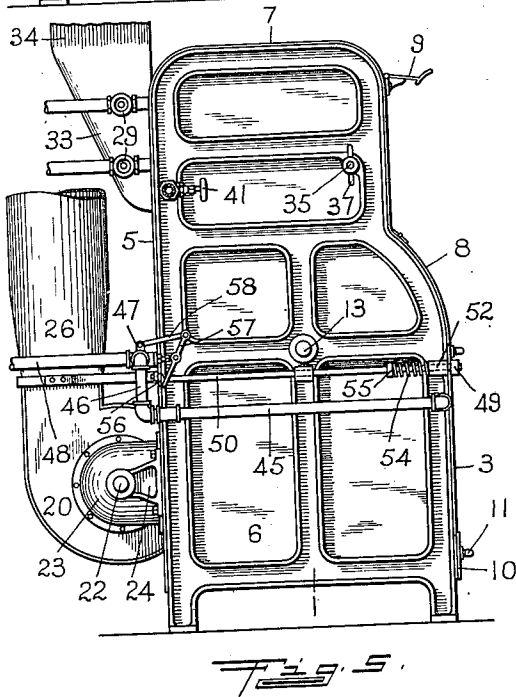
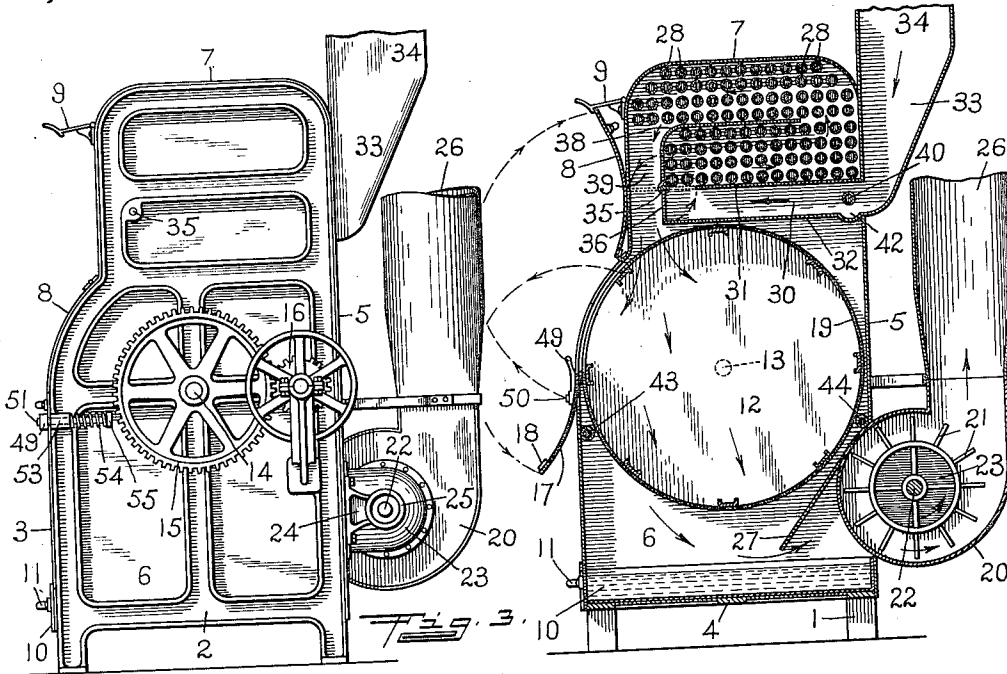
W. Jamieson.

By *David O. Barnell,*
 Attorney.

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UNITED STATES PATENT OFFICE.

SAMUEL S. DRESHER, OF OMAHA, NEBRASKA.

DRY-CLEANING FUME-EXTRACTOR.

1,240,323.

Specification of Letters Patent. Patented Sept. 18, 1917.

Application filed March 22, 1916. Serial No. 85,979.

To all whom it may concern:

Be it known that I, SAMUEL S. DRESHER, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Dry-Cleaning Fume-Extractors, of which the following is a specification.

My invention relates to the general class of dry-room tumblers, and it is the object thereof to provide, in connection with a machine of this class, various special devices adapting the same for use in extracting the fumes of gasoline or the like, as employed in dry-cleaning processes. Particular objects of my invention are to provide means for exhausting the air from the machine so that the extracted fumes will not be blown out into the room through openings in the casing; to provide air-admission means by which pure and uncontaminated air may be supplied to the machine instead of the air being drawn from a fume-filled room; to provide means by which the air may either be heated before passing through the tumbling cylinder or be drawn through the same without being heated; to provide means by which the humidity of the air may be brought substantially to the point of saturation so as to avoid the formation of static electrical charges which might cause ignition and explosion of the hydrocarbon fumes; to provide means by which lint or inflammable materials shaken out of the tumbler-cylinder may be at once wetted and rendered non-combustible; and to provide means by which such an explosion as would be caused by the ignition of fumes within the machine will automatically cause the admission to the casing of fire-extinguishing and flame-quenching fluid.

A machine embodying my invention is illustrated in the accompanying drawings, in which Figure 1 is a front view thereof with the door of the casing open, Fig. 2 is a rear elevation of the machine, Fig. 3 is an end elevation of the same, Fig. 4 is a transverse vertical section thereof, Fig. 5 is an elevation of the end opposite that shown in Fig. 3, and Fig. 6 is a detail end view illustrating the operation of the automatic fire-extinguishing means.

In the illustrated embodiment of my invention, there is provided suitable end-frames 1 and 2, between which is supported a sheet-metal casing having a front-plate 3,

bottom 4, back 5, end-plates 6 and a top-portion or hood 7. A door 8 is hinged at its upper edge to the lower front edge of the hood 7, and when closed said door completes the casing inclosure between said edge of the hood and the upper edge of the front-plate 3. A latch-hook 9 pivoted on the upper front portion of the hood 7 is adapted to engage the door to retain the same in the raised and open position thereof shown in Fig. 4. Along the lower edge of the front-plate 3 there is a horizontal rectangular opening through which a pan 10 passes slidably, the same resting upon the bottom 4 of the casing, and being in effect a shallow drawer provided with handles 11 by which it may be pulled out through the front of the casing for removal or renewal of its contents. The pan 10 is normally kept filled with water.

Within the described casing there is revolvably mounted a perforate cylinder 12 having at its ends trunnion-shafts 13 and 14 which are journaled in bearings formed respectively in the end-frames 1 and 2. The shaft 14 is extended through its bearing, and at the outer end carries a gear 15 which is driven by the pinion 16 of a reversing driving mechanism. The latter serves to drive the perforate cylinder in alternating directions and is commonly used in various laundry machinery, so that its details of construction and operation are immaterial to the present invention and need not be herein described. The casing-door 8 is so curved that it is concentric with the perforate cylinder 12, and the latter has at one side thereof a hinged door 17, slightly smaller than the casing-door. The door 17 is provided with suitable fastening devices 18, and when the casing-door is opened the cylinder-door may be opened out through door-opening of the casing, swinging downwardly to the position thereof shown in Fig. 4, to provide easy access to the interior of the cylinder from the exterior of the casing. The interior walls of the cylinder may be provided with projecting longitudinally-extending bars 19 for agitating the materials inclosed therein.

Upon the back-plate 5 of the casing, and extending partly within the same as shown in Fig. 4, there is mounted a casing 20 for an exhaust fan or blower 21 which is carried on a horizontal shaft 22 extending through the inlet-pipes 23 to suitable bear-

ings 24 secured on the back-plate 5 as shown in Figs. 2 and 3. A pulley 25 on the blower-shaft 22 is connected by belt with a suitable source of power. The inlet-pipes 23 of the blower-casing communicate with the interior of the main casing through suitable openings in the back-plate 5 near the lower edge thereof, and the discharge-opening of the blower-casing is preferably connected with suitable piping 26 which is extended outside the room or building in which the machine is placed. Within the main casing, below the perforate cylinder, and extending diagonally from the back-plate 5 toward the water-pan 10, there is a baffle-plate 27 by which the air drawn to the blower-inlets, from the main space within the casing, is all directed through a narrow rectangular opening between the lower edge of said baffle-plate and the surface of the water in the pan 10.

Within the hood 7 at the upper portion of the casing there is arranged a bank or series of longitudinally-extending steam-pipes 28 which are connected with suitable valve-controlled supply-pipes 29, so that steam or other heating medium may be circulated through them. At the lower part of the hood, beneath the heating-pipes 28, there is a flat horizontal passage 30 formed between the partition-plates 31 and 32, said passage at its rearward end communicating with the flattened and laterally-spread lower end-portion 33 of an air-supply pipe 34. The latter is extended outside the building, or to some source of pure and uncontaminated cold air. In horizontal alinement with the front edge of the partition-plate 31, and spaced equidistantly between the same and the front side of the hood, there is pivotally mounted a rod or shaft 35 on which is carried a plate 36 which extends from end to end of the casing and forms a valve or damper for controlling the supply of air to the cylinder-chamber within the main part of the casing, from the supply-passage 30. At one end the valve-shaft 35 is provided with a handle 37 by which it may be turned to move the plate between the vertical and horizontal positions thereof shown, respectively, by full and dotted lines in Fig. 4. When at its vertical position, the lower edge of the plate 36 engages the front edge of the partition-plate 32, and its upper edge engages the lower or downwardly-extending front portion of a baffle-plate 38. The latter has a horizontal portion which extends between the upper and lower portions of the series of heating-pipes 28 toward the rear side of the hood, but terminating in front of the same so that a passage is left between them. With the valve-plate 36 in the vertical position, there is a vertical passage 39 formed between the same and the front side of the hood, com-

municating at its upper end with the space around the heating-pipes in the upper portion of the hood, while its lower end opens to the upper part of the cylinder-chamber, or to the main space within the casing, adjoining the upper side of the perforate tumbling-cylinder. Thus, when the plate 36 is vertical, the air drawn from the pipe 34 passes through the spread pipe-portion 33 to the inlet passage 30, moves forwardly through said passage to the plate 36, thence passes upwardly through the opening between said plate and the front edge of the plate 31, thence passes rearwardly through the heating-pipes 28 and upwardly around the rear edge of the plate 38, thence forwardly through the upper series of heating-pipes, and finally down through the passage 39 into the cylinder-chamber. When the valve-plate 36 is turned to the horizontal position, the opening from the passage 30 to the heating-chamber is closed, and the cold air passes directly from the passage 30 into the lower end of the passage 39, and enters the cylinder-chamber without being heated by circulation through the space around the pipes 28.

Extending horizontally at the rearward end of the air-passage 30, there is a perforate pipe 40 which is connected with a source for supplying steam thereto, a manually-controlled valve 41 being provided for regulating the supply of steam to said perforate pipe. The steam admitted through said pipe mingles with the incoming air-supply and serves, if necessary, to raise the humidity of the air to a point unfavorable to the formation of static electrical charges by the friction of non-conducting materials in such an atmosphere. Beneath the pipe 40 the plate 32 has a concave trough-portion 42, which serves to receive any water that may condense and drip from the pipe, preventing such water from being drawn into the cylinder-chamber except in the form of vapor.

Near the front and rear sides of the cylinder-chamber there are disposed perforate pipes 43 and 44 which extend through one end of the casing and are connected by pipes 45 and 46 with a valve 47 controlling the passage thereto from a supply-pipe 48. The valve 47 is so arranged as to be automatically opened by the forcible opening of the casing-door 8, as by an explosion within the casing, the connecting mechanism being as follows: At the ends of the casing adjacent to the lower edge of the door 8 there are fastening devices for said door, comprising hand-levers 49 secured on the front ends of small horizontal shafts 50 and 51 that are mounted slidably and rotatably in suitable bearings 52 and 53 on the respective end-frames 1 and 2, as shown in Figs. 3 and 5. Said shafts 50 and 51 are pressed

rearwardly by springs 54 arranged between the rear ends of the respective bearings and collars 55 which are secured to the shafts as shown, said springs normally holding the hand-levers 49 against the front ends of the bearings so that when the levers are turned in front of the door they will hold the same tightly closed. Should the door be forcibly moved outward, however, as by an explosion within the casing, the springs 54 will permit the shafts to move forwardly far enough to allow the door to open. Now the shaft 50 is extended rearwardly to a point near the back edge of the casing, and at its rear end has a head 56 which is engageable with a lever 57 that is pivotally connected with an arm 58 and with the stem of the valve 47, as shown in Figs. 5 and 6. The valve is normally closed, as shown in Fig. 5, but when the shaft 50 is pulled forward by the forcible opening of the door the lever 57 is moved to a position such as shown in Fig. 6, so that the valve is opened. The supply-pipe 48 is preferably connected with a source for supplying steam thereto, as steam is a very effective and economical fire-extinguishing means under the conditions met with in connection with use of the described mechanism. It will be obvious, however, that any fire-extinguishing fluid may be automatically supplied in the same manner, being forced through the pipe 48 and discharged into the casing through the perforate pipes 43 and 44.

It will be apparent that the described mechanism is especially adapted for use in dry-cleaning establishments, wherein clothing and other articles are cleaned by the use of gasoline, benzin, or like volatile and inflammable liquid hydrocarbons. After the cleaning of the articles and the separation of the liquid cleaning medium therefrom as effectively as possible by the use of centrifugal extractors or the like, there remains in the materials a certain amount of the gasoline or the like used in the cleaning process. The materials at this stage of the process are placed in the tumbling-cylinder 12 of the fume extractor, the doors 8 and 17 being opened as shown in Fig. 4, and afterward closed and secured by the fastening devices therefor. Power is applied to the machine to drive the tumbling-cylinder and the exhaust-blower, whereby the materials in the cylinder are agitated and a current of air drawn through them, which quickly evaporates and removes therefrom the fumes of the cleaning liquid. For ordinary materials the air drawn through the machine is heated by passing around the heating-pipes 28 in the hood 7, but when cleaning furs, or any materials which might be injured by heat, the valve-plate 36 is turned to the horizontal position thereof, at which the cold air from the passage 30 is admitted directly

to the cylinder-chamber. Whenever it is necessary or desirable a certain quantity of steam is admitted to and mingles with the air passing through the inlet-passage 30, the steam being supplied through the perforate pipe 40, and the supply being controlled by the valve 41 as may be required by the prevailing atmospheric conditions. It will be understood that the steam so admitted and mixed with the air that passes through the machine, is for the purpose of so raising the humidity thereof as to inhibit the formation of static electrical charges by the agitation of the materials in the tumbling-cylinder, and that the moisture so supplied is not intended to be, normally, more than will become mixed with the air in the form of true water vapor. In case of fire, however, the valve 41 may be fully opened so that the additional quantity of steam admitted may assist in extinguishing the flames.

It has been found in practice that, notwithstanding the most careful searching of the pockets of garments that have been worn, there will occasionally be matches or other inflammable materials left in the garments, and that during the tumbling operation such materials may be dislodged and fall from the perforate cylinder. Now, in machines having heating devices located beneath the tumbling-cylinder, such inflammable materials are apt to become ignited and to cause an explosion of the combustible mixture of air and gasoline fumes contained in the machine. In the described mechanism, however, any such inflammable material, including lint and debris of all kinds that is dislodged from the clothing or other articles in the tumbling-cylinder, falls at once into the water in the pan 10, and thereby becomes wetted and harmless. The water-pan may be withdrawn from time to time, its contents removed and water supplied thereto. The baffle-plate 27, by directing the air from the cylinder-chamber in a thin sheet or stream over the surface of the water in the pan, facilitates the entrainment therein of any solid particles that are drawn along with the air, and insures the retention of such particles in the water-pan.

By the provision of the air-supply pipe 34 the air that enters the machine may be drawn from an uncontaminated source, instead of being taken from the room containing the machine, which is usually so associated with the other machines used in the cleaning process that the room is more or less filled with fumes or dust. Likewise the use of the pipe 26 to conduct away the air that passes through the machine, aids in keeping clear the air in the room containing the machine, and, by the use of an exhausting blower instead of a pressure blower to cause the circulation of air through the machine, any leakage of air through openings

in the casing will be inward instead of outward. Thus also, if the door 8 should be forced open by the ignition of fumes within the machine while the blower was in operation, there would be a tendency to draw the flame and smoke into the machine rather than to force the same out into the room and endanger the operator. The automatic fire-extinguishing means operated by the forcible opening of the casing-door 8 has been fully described hereinbefore, and it will be apparent that the same, together with the other special structural features herein noted, combine to produce a safe, simple and efficient machine for the purposes set forth.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a dry-cleaning fume extractor, a rotatable perforate cylinder, a casing inclosing the same, means for exhausting air from the lower part of said casing and for supplying air thereto at the upper part, and a water-pan disposed in the casing below the cylinder and adapted to receive solids falling therefrom.

2. In a dry-cleaning fume extractor, a tumbling-cylinder, a casing inclosing the same, heating means disposed within the casing above the cylinder, means forming an air-inlet passage extending adjacent to the heating means, means for directing air from said inlet passage through the heating means to the tumbling-cylinder, said directing means including a part movable to a position for admitting air immediately from the inlet passage to the cylinder, and air-impelling means for causing a flow of air from said inlet passage through the cylinder.

3. In a dry-cleaning fume extractor, a

tumbling-cylinder, an inclosing casing therefor, means forming an air-inlet passage to said casing, air-impelling means for causing a flow of air from said inlet passage through the cylinder, and means in said inlet passage for supplying water vapor to humidify the air that enters the casing through the same.

4. In a dry-cleaning fume extractor, a tumbling cylinder, a casing inclosing the same, means forming air-inlet and exhaust passages opening to said casing at substantially opposite sides of the cylinder, air-impelling means for effecting a circulation of air through the casing between said inlet and exhaust passages, and a water-filled debris-receptacle positioned adjacent to said exhaust outlet to intercept materials passing from the cylinder toward said outlet.

5. In a dry-cleaning fume extractor, a casing having an outwardly-openable door, a perforate tumbling-cylinder revolvably mounted in the casing and having at one side a door openable through the casing-door opening, a yieldable fastening device for securing the casing-door in closed position, means forming air-inlet and outlet passages to said casing at substantially opposite sides of the cylinder, air-impelling means connected with said outlet passage to draw air through the casing from the inlet passage, means for admitting steam to the casing, manually-operable controlling means for a part of the steam-supply, and automatic controlling means for a part of said steam supply, said latter means being connected with the yieldable fastening device for the casing-door and being actuated by forcible opening of said door.

SAMUEL S. DRESHER.