W. DOHN.

CLOTHES DRYING TUMBLER MACHINE.

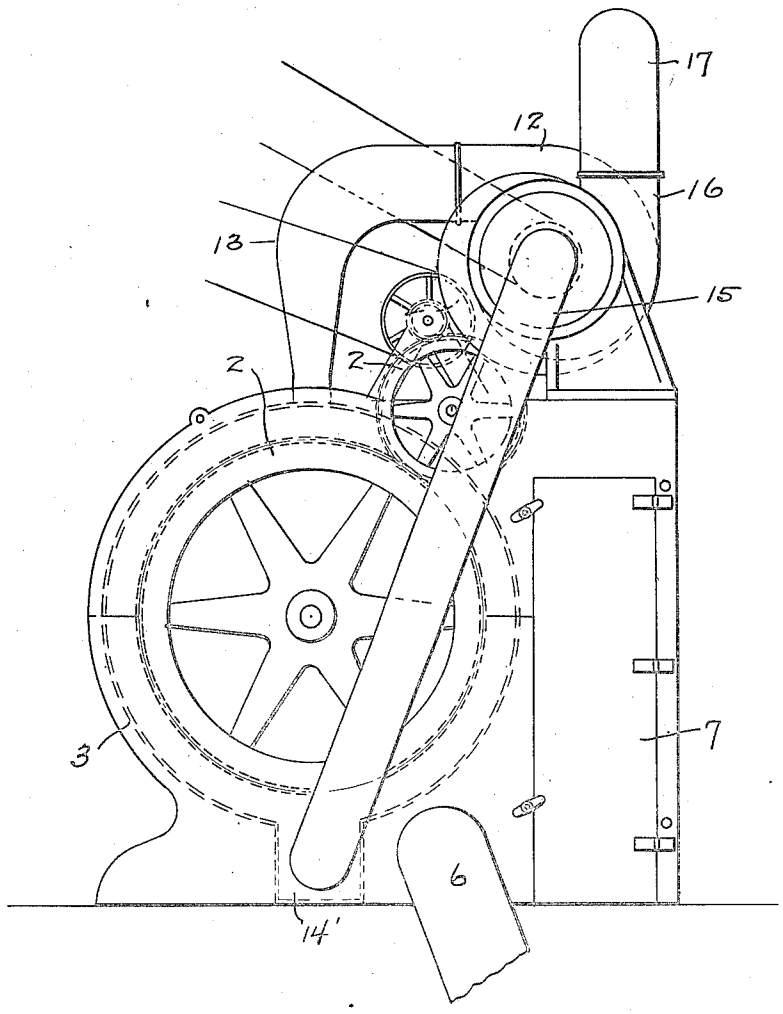
APPLICATION FILED JUNE 7, 1916.

1,247,798.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 1.

Fig. 1.



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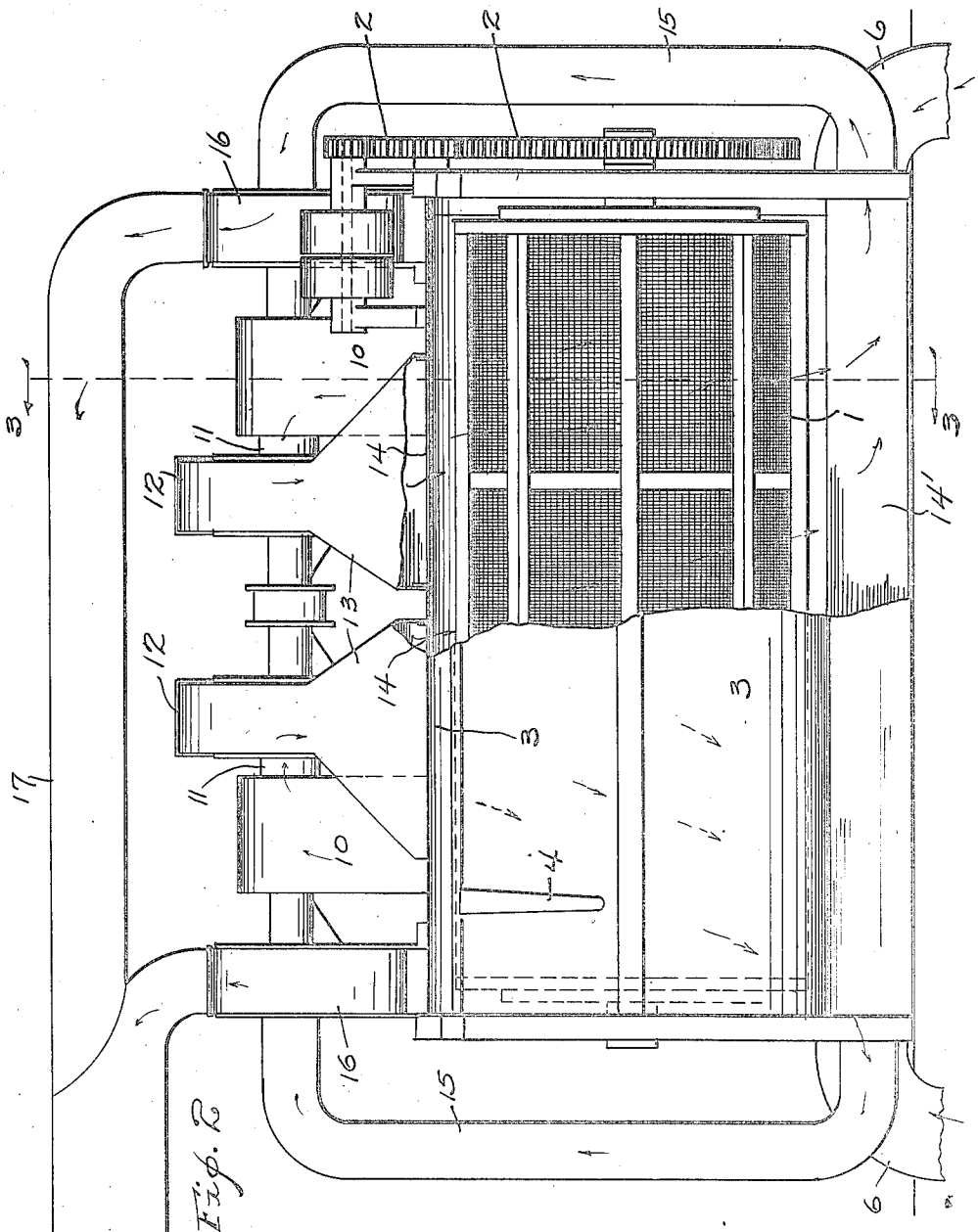


Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 3.

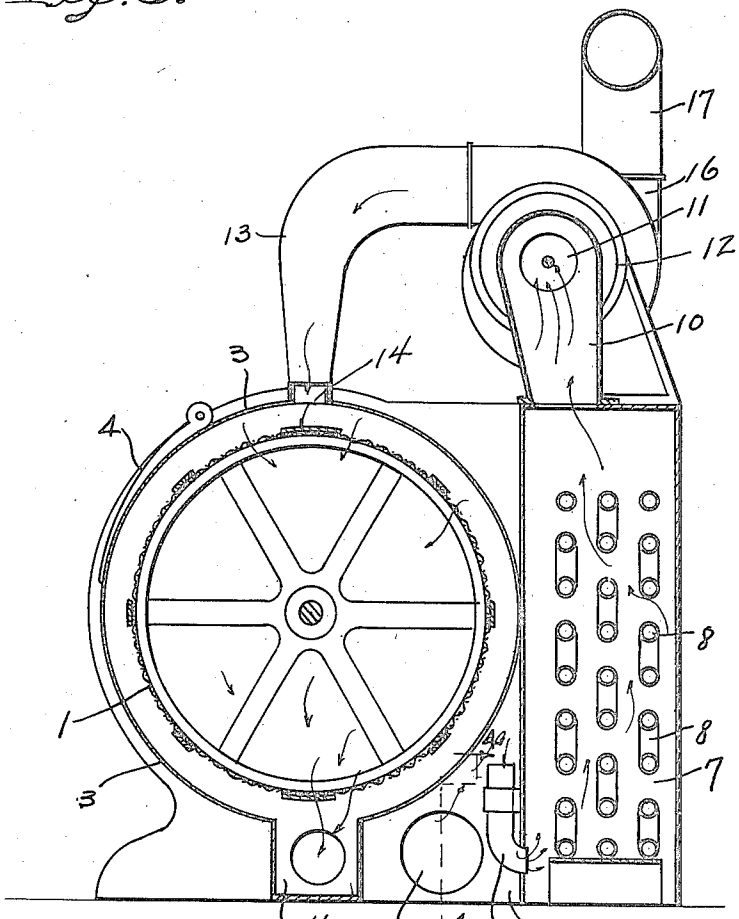
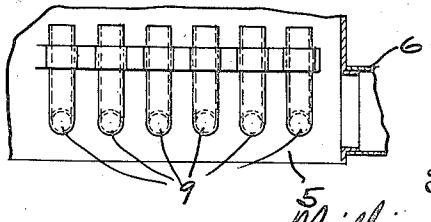


Fig. 4.



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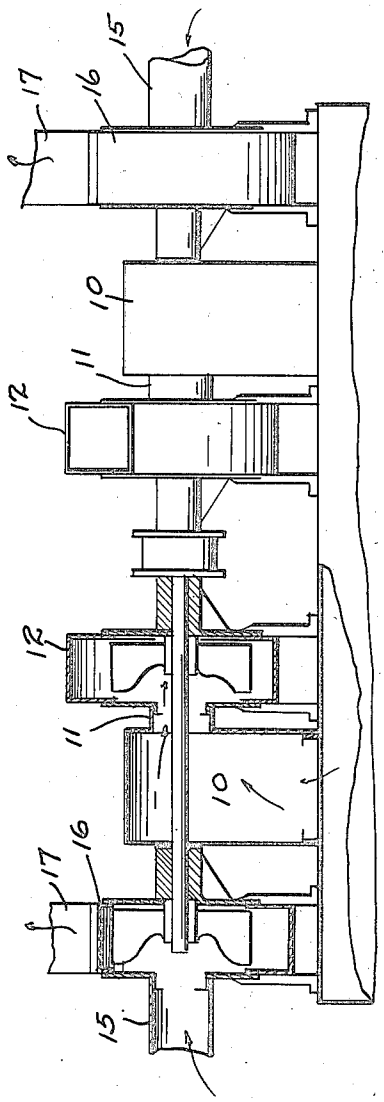


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM DOHN, OF INDIANAPOLIS, INDIANA.

CLOTHES-DRYING TUMBLER-MACHINE.

1,247,798. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed June 7, 1916. Serial No. 102,301.

To all whom it may concern:

Be it known that I, WILLIAM DOHN, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, have invented and discovered certain new and useful Improvements in Clothes-Drying Tumbler-Machines, of which the following is a specification.

My invention relates to clothes drying tumbler machines, and its object is to provide a machine of this character adapted to produce such a circulation of drying air through the machine that the accumulation of pressure therein will be prevented and the vapor of the gasolene employed in the cleaning process rapidly drawn off as it is diffused from the cleaned clothes, whereby danger of an explosion due to the gasolene fumes is avoided and at the same time the articles are dried very rapidly; and the invention also contemplates the provision of means for enabling the above result to be obtained with a minimum amount of power for the air circulating means, and also the provision of means to avoid the loss of heat in the steam coil.

With these objects in view, my invention is embodied in preferable form in the construction and arrangement hereinafter described and illustrated in the accompanying drawings.

In these drawings, Figure 1 is an end view in elevation of the machine; Fig. 2, a front view partly broken away; Fig. 3, a vertical section on the line 3—3 of Fig. 2, Fig. 4 a detail vertical section on line 4—4 of Fig. 3; and Fig. 5, a detail front view in elevation of the series of fans.

Referring to the drawings, 1 is the rotating tumbler cylinder in which the clothes are adapted to be placed after they have been cleaned with gasolene and which cylinder is adapted to be rotated by driving gears 2 which may be of any suitable construction and the details of which form no part of my present invention.

Surrounding the tumbler cylinder is a cylindrical casing 3 which is provided at the front of the machine with hinged door 4 extending across the front of the apparatus and adapted to be raised by hand and to be retained in closed position by gravity.

Extending longitudinally of the machine to the rear of the closed casing 3 is a pre-heating air receiving chamber 5 which is adapted to have communication with a pipe 6 which preferably leads to the open air outside the building in which the machine is located. The air is drawn in through the pipe 6 into the chamber 5 by an induced draft by means of centrifugal fans so arranged as to produce a suction upon the chamber 5. The chamber 5 is located adjacent a heating chamber 7 which is adapted to contain a series of steam heated coils 8. Communication between the pre-heating chamber 5 and the main heating chamber 7 is obtained by means of a series of vertical pipes 9 mounted in said chamber 5 and having their upper ends extending a considerable distance above the admission opening of the pipe 6 whereby the air admitted to the chamber 5 is caused to rise therein, being thereby heated by contact with the exterior of the wall of the chamber 7 and then being drawn downwardly into the pipes 9 and thence escaping through the lower ends of said pipes into the chamber 7. Owing to the construction of the means of communication between the two chambers in a series of separated pipes extending longitudinally of the two chambers the air is effectively diffused and also effectively pre-heated before entering the main chamber 7. The object of thus pre-heating the air is to prevent a condensation of the steam in the main heating chamber, thus avoiding a loss of heat. The thorough and effective distribution of the air throughout the length of the two chambers 5 and 7 is further insured by having the pipe 6 divided into two branches and entering the machine at each end thereof.

The air rises through the chamber 7, being effectively heated by the coils therein to any temperature desired, as determined by suitable regulating means controlling the steam pressure in the coils, and from such chamber the air passes into two wide connecting pipes 10 which communicate with pipe sections 11 extending longitudinally of the machine. Communicating with this pipe are the inlets of fan casings 12 adapted to contain centrifugal pressure fans and having their outlets directed forwardly toward the front of the machine and communicating with vertical downwardly opening pipes 13 which are widened out longitudinally of the machine and communicate by means of elongated openings 14 formed through the upper part of the casing 3 with the space or chamber inclosed by said casing. The

centrifugal fans in the fan casings 12 thus serve to create an induced or suction draft on the heated air coming from the chamber 7 and a forced or pressure draft upon the air passing from the fan into the casing surrounding the perforated tumbler cylinder. The longitudinal spacing of the two conveying pipes 13, in conjunction with their widened outlet mouths and the elongated admission openings in the top of the casing 4 provide an even and thorough distribution of the air throughout the chamber and also in conjunction with the employment of two fans for producing the draft, enable such circulation to be effective at much less expenditure of power than would be required with a single large fan having the capacity of the two fans employed.

The heated air is forced down through the perforated tumbler cylinder, effectively drying the clothes and drawing off the gasolene vapors therefrom.

The dust and lint from the perforated cylinder will fall into a chamber 14' in the bottom of the casing 4. This chamber communicates at each end with an outlet pipe 15, which pipes serve to draw off the air and gasolene vapors from the drying tumbler.

In order to increase the rapidity of circulation through the drier and to overbalance the pressure of the incoming air, means are provided for creating an outward suction draft on the drying cylinder which is stronger than the current of air directed into the cylinder from the outside.

To this end each of the pipes 15 leads to a casing 16 provided with a centrifugal fan having its outlet extending upwardly and toward the outlet and adapted to exert a suction draft in the pipes 15 and the drying cylinder and to force the waste gases and air from said pipes to the outlet. These fans communicate with a common outlet pipe 17, above the machine which leads to the open air. All the fans are mounted on the same line shaft, whereby a saving of power is effected owing to the fact that several bearings that would be required for separately mounted and driven fans, are dispensed with.

In order to produce this greater suction on the outgoing or exhaust air coming from the drying cylinder, than on the air forced into the cylinder, so as to thereby avoid an accumulation of pressure, the two sets of fans are made of the same capacity as are also the inlet and outlet pipes, while owing to the friction imposed on the incoming air by its passage through and over the air chamber 5, the pipes 9, the chamber 7 and past the steam coils in the latter, and possibly owing to the relative densities of the incoming and outgoing gaseous matter, the outgoing or suction draft on the drying cylinder will exceed and over-balance the pressure imparted to the current of air directed into the cylinder. This action has been demonstrated in use and observed from the suction created on the door of the casing which has been found sufficient to hold the door closed against a considerable outward pull thereon. Thus, by this arrangement, not only is a double draft, namely, a pressure current and a suction current established on the drying cylinder which will rapidly and very effectively dry the clothes, but also such an accumulation of pressure as would increase the danger of explosions due to the presence of the highly explosive gases in the drying chamber, is prevented.

Having thus described my invention, what I claim is:—

1. In a machine for drying clothes, in combination with a clothes tumbler, a high pressure fan for directing a current of air from the outside into said tumbler and having communication with the upper part of the latter, and a high pressure fan for creating a suction on said tumbler to draw the gases therefrom and having communication with the lower part of said tumbler.

2. In a clothes drying machine, in combination with a clothes tumbler, air heating means, an air admitting pipe, a pre-heating chamber between said pipe and the heating means and a pressure fan intermediate the heating means and the tumbler and having communication with said elements, and operable to draw the air from the heating means and force it under pressure into the tumbler.

3. In a clothes drying machine, in combination with a clothes tumbler, air heating means, means for inducing a draft on the air heating means, a pre-heating chamber intermediate the outlet of said pipe and the main heating means, said chamber having a plurality of openings communicating with the main heating chamber and arranged longitudinally of the axis of the tumbler.

4. In a clothes drying machine, in combination with a clothes tumbler, main air heating means inclosed in a chamber, means providing a pre-heating chamber adjacent said main heating chamber, an air admitting pipe leading to said pre-heating chamber, means for exerting an induced draft on said main heating chamber, and a longitudinally arranged series of vertical pipes in said pre-heating chamber having their upper ends above the outlet from the admission pipe and being open at said upper ends and communicating at their lower ends with said main heating chamber.

5. In a clothes drying machine, in combination with a clothes tumbler, air heating means, means for admitting air to said heating means, a plurality, of pressure fans spaced apart longitudinally of the axis of the tumbler and having communication with

said heating means, means leading from the said pressure fans to the tumbler at the upper part of the latter to admit currents of air under pressure to said tumbler, an escape flue below the tumbler and extending longitudinally of the axis thereof, an outlet pipe leading from each end of said escape flue, and a pressure fan for each outlet pipe operable to suck the gases therefrom and force the same to a suitable outlet.

6. In a clothes drying machine, in combination with a clothes tumbler, a plurality of pressure fans for drawing air into the machine and forcing it under pressure into the tumbler, and a plurality of fans spaced apart longitudinally of the tumbler for drawing the air and gases from the tumbler and forcing them to an outlet, all of said fans being mounted on the same line shaft.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 13th day of May, A. D. nineteen hundred and sixteen.

WILLIAM DOHN. [L. S.]

Witnesses:
H. P. DOOLITTLE,
CLARA HAUG.