C. L. BRALEY.

LAUNDRY DRIER.

APPLICATION FILED APR. 23, 1921.

1,434,193.

Patented Oct. 31, 1922.

3 SHEETS—SHEET 1.

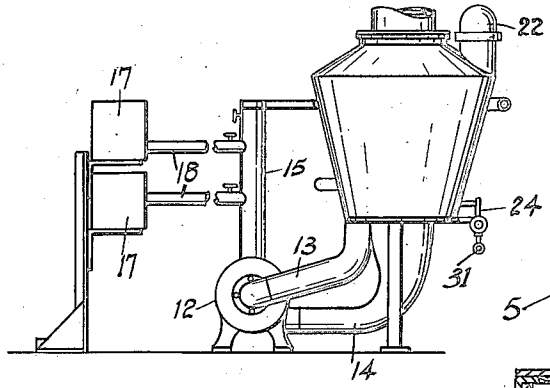


Fig. I.

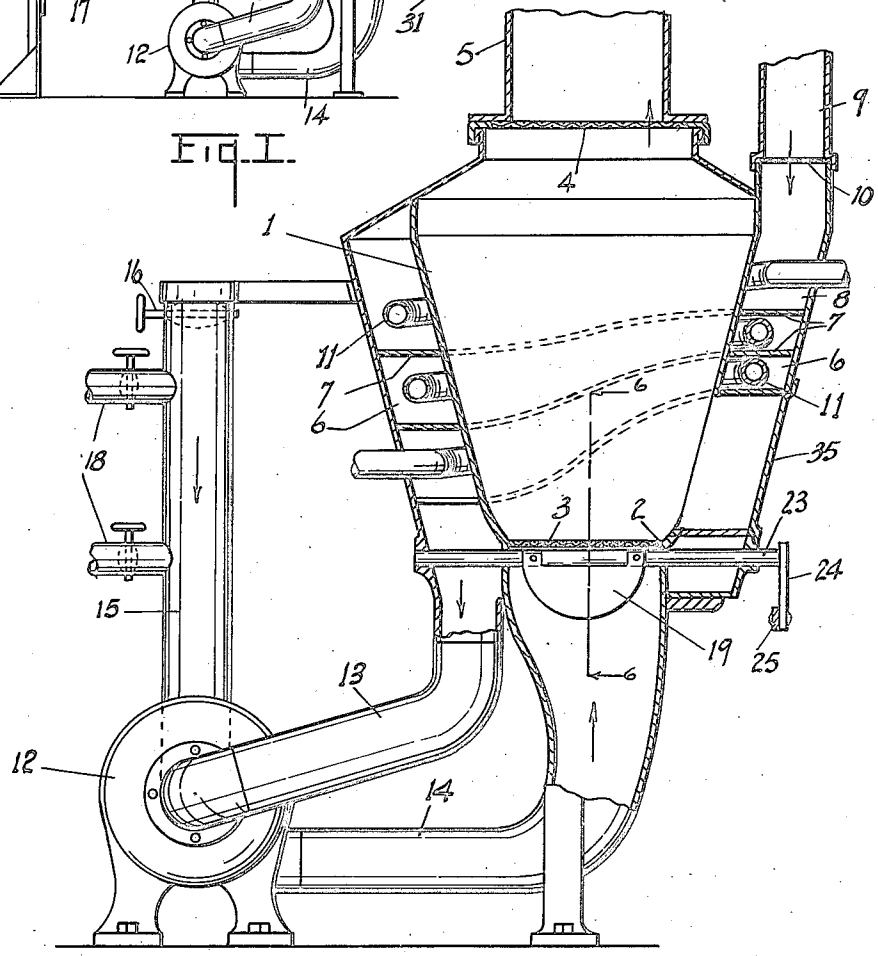


Fig. II.

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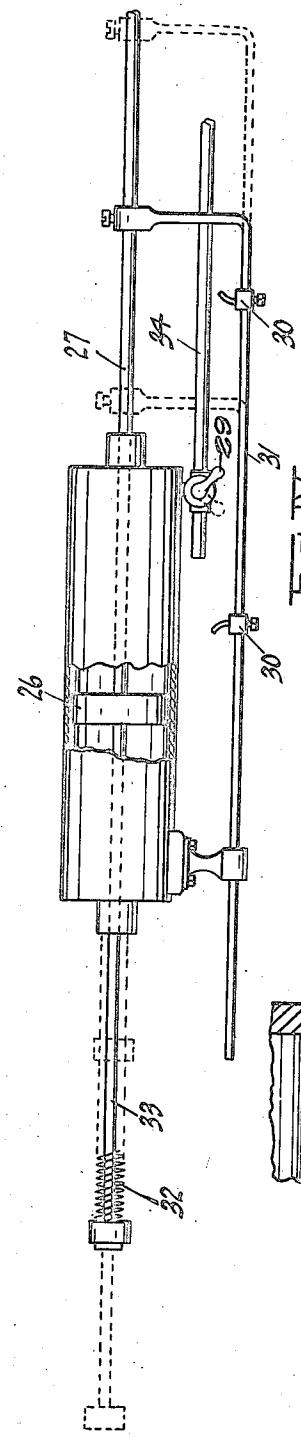


FIG. IV.

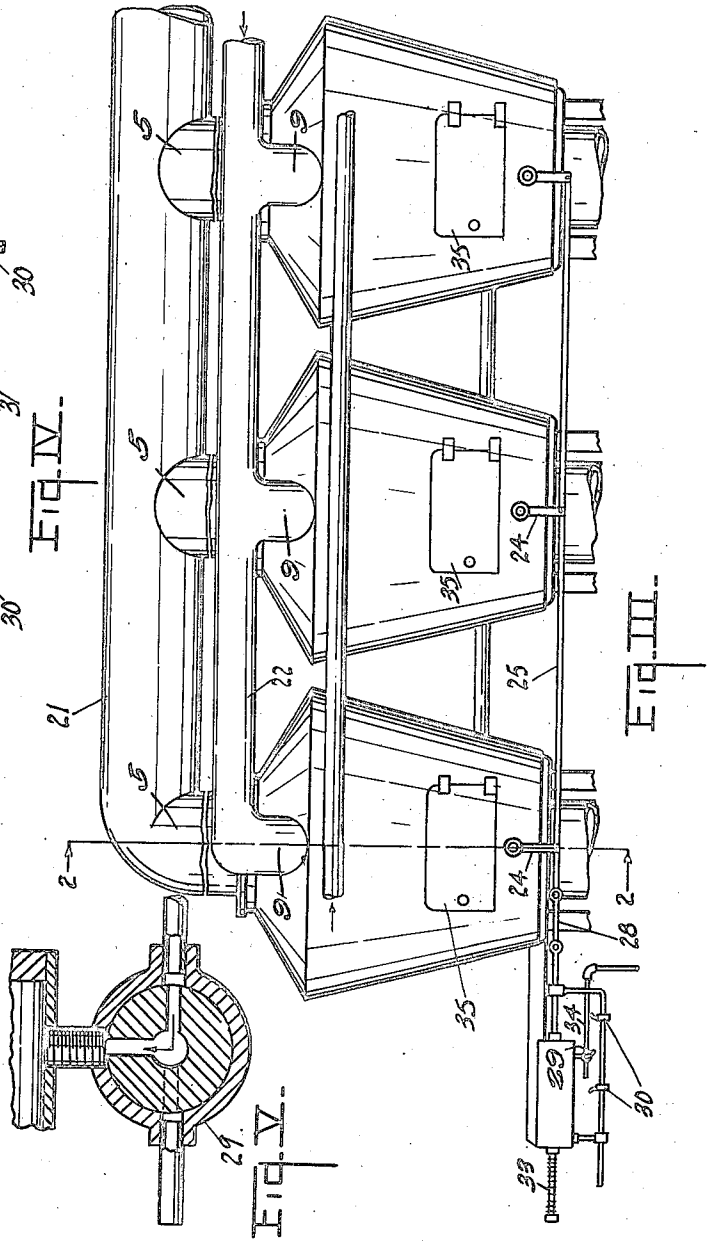


FIG. III.

FIG. V.

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3 SHEETS—SHEET 3.

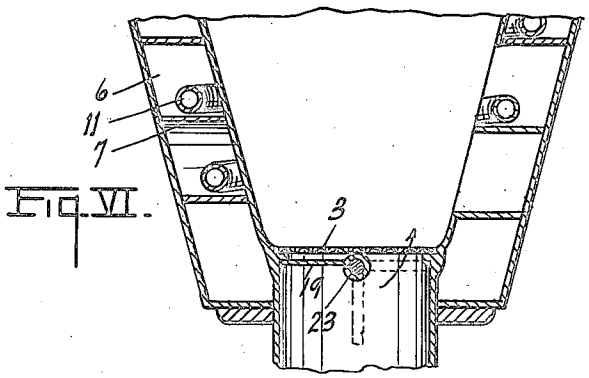


FIG. VI.

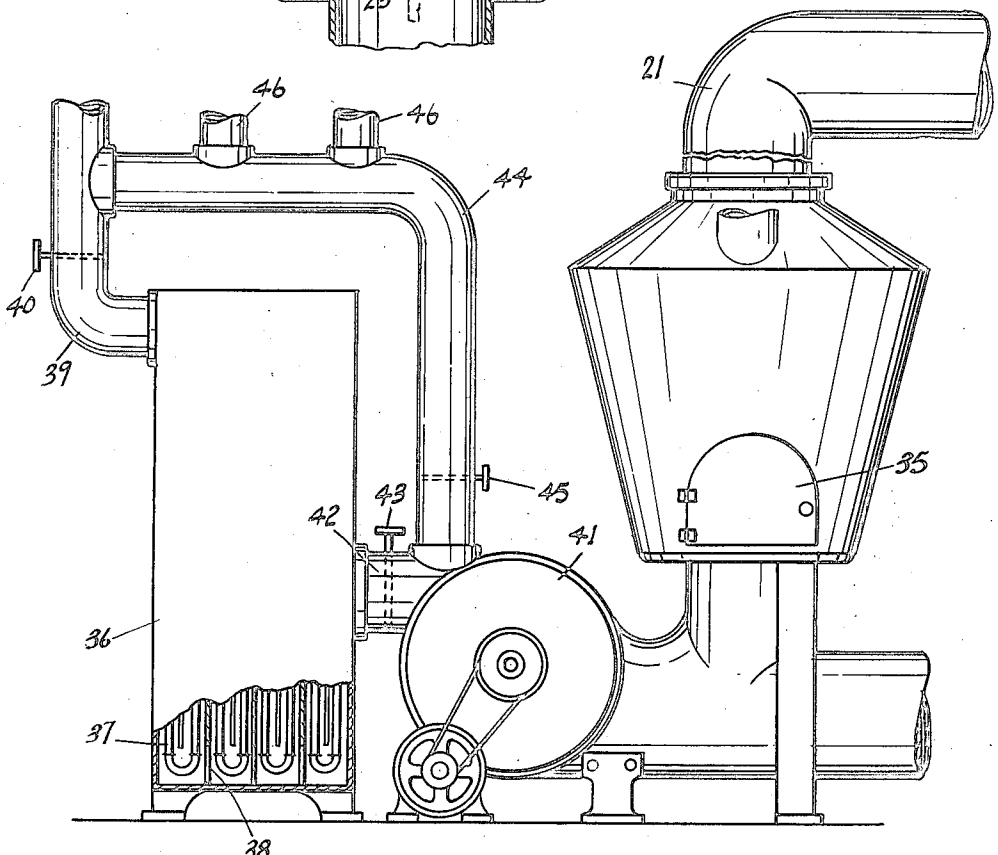


FIG. VII.

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Patented Oct. 31, 1922. 1,434,193

UNITED STATES PATENT OFFICE.

CHARLES L. BRALEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES F. NOFTZGER, OF CHICAGO, ILLINOIS.

LAUNDRY DRIER.

Application filed April 23, 1921. Serial No. 464,057.

To all whom it may concern:

Be it known that I, CHARLES L. BRALEY, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Laundry Driers, of which the following is a specification.

This invention relates to improvements in laundry driers.

The main objects of this invention are:

First, to provide an improved laundry drier by means of which laundry may be quickly dried and treated with fresh cold air or air having therein a purifying, deodorizing, disinfecting or perfuming agent, as may be desired.

Second, to provide an improved laundry drier which is of very large capacity and one by means of which the clothes are left in a fluffy and unwrinkled condition, it being possible to evenly dry the clothes to the desired condition for ironing or dry them completely, as may be desired.

Third, to provide an improved laundry drier which is effective for drying laundry as it comes from the washing machines or with the water partially extracted, as by means of a centrifugal extractor.

Fourth, to provide an improved laundry drier which is very simple and compact in structure.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. I is a detail front elevation of a single unit drier embodying the features of my invention, no attempt having been made to maintain the proper relative proportion of the parts and certain parts being shown conventionally and certain pipes or conduits being partially broken away.

Fig. II is a fragmentary view partially in vertical section on a line corresponding to line 2—2 of Fig. III.

Fig. III is a fragmentary front elevation of a group or series of the driers.

Fig. IV is an enlarged detail elevation of the air shutter actuating means, the parts being shown in one position by full lines and at the extreme of its movement the piston is shown in either direction by dotted lines.

Fig. V is an enlarged detail section through the cylinder control valve.

Fig. VI is a detail section on a line corresponding to line 6—6 of Fig. II, showing details of the air control shutter.

Fig. VII is a detail side view of a modified form of my improvements in which the air heating chamber is separate from the drying chamber.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, I provide a drying chamber 1, preferably in the shape of an inverted cone or expanding upwardly from the inlet opening 2 at the bottom thereof. This inlet opening is provided with a screen 3. At its upper end the chamber is provided with a screened discharge opening 4 with a discharge conduit 5, preferably leading out of the building in which the drier is installed.

The drying chamber is surrounded with an air heating chamber 6 having a spiral partition 7 therein providing a spiral passage 8, the air inlet pipe 9 being connected to the upper end of this passage, there preferably being a screen 10 to screen the dirt and dust from the air. This air inlet preferably leads to the outside of the building or some source of pure air.

A heating coil 11 is arranged in the passage 8 so that the air flows along the coil. This coil is shown conventionally.

The blower 12 is connected to the heating chamber by the conduit 13 and its delivery pipe 14 is connected to the inlet of the drier. A pipe 15 provided with a damper 16 is provided for admitting cold air to the blower so that cold air or warm air or air tempered as desired may be delivered to the drying chamber. I also preferably provide means for supplying a disinfecting gas or the like or ozone or a deodorizing or perfuming agent, there being a pair of tanks 17, shown conventionally in Fig. I, connected to the pipe 15 by means of the valved pipes 18.

By this arrangement the air is delivered into the bottom of the casing, the articles being suspended by and agitated by the air in the chamber, which results in their even and rapid drying without serious wear on the clothes or brushing up or removing the nap.

To further agitate the clothes and prevent their becoming wrapped or twisted together, I provide a shutter 19 supported below the screen 3 so as to substantially shut off one side thereof, causing the air to pass through the other side of the screen and giving the articles more or less of a rotary movement within the drier, the movement being changed by the shifting of the shutter to close off the other side of the screen. This is found to add very materially to the drying capacity and the clothes come from the drier in a very satisfactory condition, uniformly dry and without wrinkles or creases, the drying being very similar to open air drying, the passing of the fresh air through the drying machine giving a fresh odor which is much desired. Thus ozone or other sweetening agents may be employed if desired or disinfectants or the like.

In Fig. III I show a series of my improved drier units, the discharge 5 being connected to a common conduit 21, the inlets 9 being connected to a common inlet 22. The stems 23 of the shutters 19 are provided with arms 24 connected by a link 25 for simultaneous operation. This link is controlled from the piston 26, the rod 27 of which is connected to the link 25 by the connecting link 28.

The passage of the actuating fluid to the cylinder is controlled by the valve 29 actuated by the tappets 30 on the tappet rod 31 carried by the piston rod 27, so that the piston is gradually moved to the left with the parts as in Fig. IV until the right hand tappet opens the valve which allows the spring 32 to return the piston, the spring being mounted on the rod 33 projecting from the piston. As the piston is returned the left hand tappet moves the valve to the position shown in Figs. IV and V when the actuating fluid is conducted to the cylinder. The source of supply for the actuating fluid is not illustrated further than the pipe 34.

The laundry is introduced in the drying chambers through the doors 35, shown conventionally.

In Fig. VII I show a modification in which the air heating chamber 36 is separate from the drying chamber, coils 37 being arranged in the air heating chamber between baffles 38 disposed to provide a zig zag passage for the air through the drying casing, the air inlet pipe 39 being controlled by the valve 40. The blower 41 is connected to the casing 36 by the pipe 42 having a valve 43 therein. A by pass 44 is provided for the air heating chamber, this pipe being controlled by a valve 45 and having connections 46 for the tanks, as 17, shown in Fig. I.

The embodiment shown in Figs. I and II is very desirable on account of compactness.

My improved laundry drier is very efficient in the matter of capacity or volume of work and further, articles dried therein are substantially without wrinkles and light and fluffy, so that ironing is minimized, for instance, a single roll mangle will leave articles dried by my improved drier in as good condition as a mangle or ironing machine containing three or more rolls when the articles are dried with the ordinary tumbler drier, and a very great advantage is that the wear on the articles is minimized, there being very little lint or nap worn off or disengaged from the fabric.

I have illustrated and described certain embodiments or adaptations of my improvements which I have demonstrated to be very practical. I have not attempted to illustrate or describe certain embodiments or adaptations which might prove desirable and which I contemplate for different installations, as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a laundry drier, the combination of a drying chamber having a screened inlet at the bottom and a screened discharge at the top, said chamber being tapered downwardly to its said inlet, an air heater casing surrounding said drying chamber and having a spirally arranged partition therein providing a spiral passage surrounding said drying chamber, said passage having an air inlet at its upper end, a heating coil arranged in said passage, and a blower connected to the lower end of said air heating chamber and having a delivery connection to the inlet of said drying chamber.

2. In a laundry drier, the combination of a drying chamber having a screened inlet at the bottom and a screened discharge at the top, an air heater casing surrounding said drying chamber and having a spirally arranged partition therein providing a spiral passage surrounding said drying chamber, a heating coil arranged in said passage, and a blower connected to said air heating chamber and having a delivery connection to the inlet of said drying chamber.

3. In a laundry drier, the combination of an upwardly expanding drying chamber having a screened inlet at the bottom and a screened discharge at the top, an air heater casing surrounding said drying chamber, a heating coil arranged in said heating casing

around said drying chamber, and a blower connected to said air heating chamber and having a delivery connection to the inlet of said drying chamber.

4. In a laundry drier, the combination of an upwardly expanding drying chamber having a screened inlet at the bottom and a screened discharge at the top, an air heater casing surrounding said drying chamber, a heating coil arranged in said heating casing, and a blower connected to said air heating chamber and having a delivery connection to the inlet of said drying chamber.

5. In a laundry drier, the combination of a drying chamber having an air discharge at the top and an air inlet at the bottom, a blower connected to the air inlet whereby air delivered to the chamber is discharged upwardly through the articles therein, means for supplying cold or heated air to the blower, and means for introducing an agent to the air delivered to the drying chamber for disinfecting or deodorizing or perfuming the laundry, as may be desired.

6. In a laundry drier, the combination of a drying chamber having an air discharge at the top and an air inlet at the bottom, a blower connected to the air inlet whereby air delivered to the chamber is discharged upwardly through the articles therein, and means for introducing an agent to the air delivered to the drying chamber for disinfecting or deodorizing or perfuming the laundry, as may be desired.

7. In a laundry drier, the combination of a drying chamber having an air discharge at the top and an air inlet at the bottom, a blower connected to the air inlet whereby air delivered to the chamber is discharged upwardly through the articles therein, means for controlling the air inlet opening so that the delivery of air may be shifted from side to side, and means for supplying cold or heated air to the blower.

8. In a laundry drier, the combination of a drying chamber having an air discharge at the top and an air inlet at the bottom, means for delivering a blast of air to said air inlet and upwardly through the articles therein, and means for controlling the air inlet opening so that the delivery of air may be shifted from side to side thereof.

9. In a laundry drier, the combination of an upwardly expanding drying chamber having an inlet opening at the bottom, a means for supplying a blast of air to said inlet opening, and a shutter for said inlet opening adapted to alternately cut off parts of said inlet opening whereby the delivery of air is shifted from side to side.

10. In a laundry drier, the combination of an upwardly expanding drying chamber having a screened inlet at the bottom and a screened discharge at the top, a blower connected to the bottom opening, a shutter disposed below said inlet opening screen and adapted to be swung from side to side thereof whereby the inlet opening is cut off first on one side and then on the other.

11. In a laundry drying apparatus, the combination of a drying chamber having a screened inlet at the bottom and a discharge at the top, a blower connected to the inlet, a shutter disposed below the screen of said inlet opening and adapted to swing from side to side, means for controlling said shutter comprising a cylinder, a piston operatively connected to said shutter, an operating fluid supply connection for said cylinder comprising a valve connected to said cylinder beyond the stroke of the piston, a tappet operating means for said valve operatively associated with said shutter actuating means, and a return spring for said piston.

12. In a laundry drier, the combination of a drying chamber having a discharge at the top, means for delivering a blast of air to the bottom of said chamber and upwardly through the articles therein, and means for controlling the delivery of the blast of air so that it strikes the articles within the chamber in different relations, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES L. BRALEY. [L. S.]

Witnesses:
LUELLA G. GREENFIELD,
MARGARET L. GLASGOW.