

S. H. DAVIS.
CLOTHES DRYING MACHINE.
APPLICATION FILED FEB. 21, 1921.

1,432,388.

Patented Oct. 17, 1922.

3 SHEETS—SHEET 1.

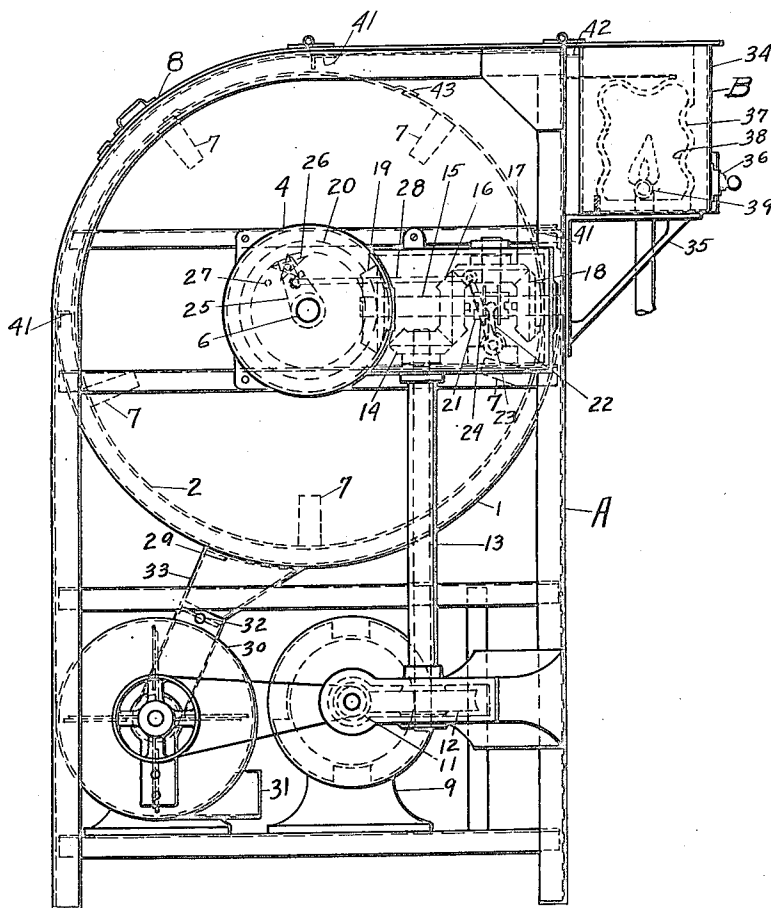


Fig. 1

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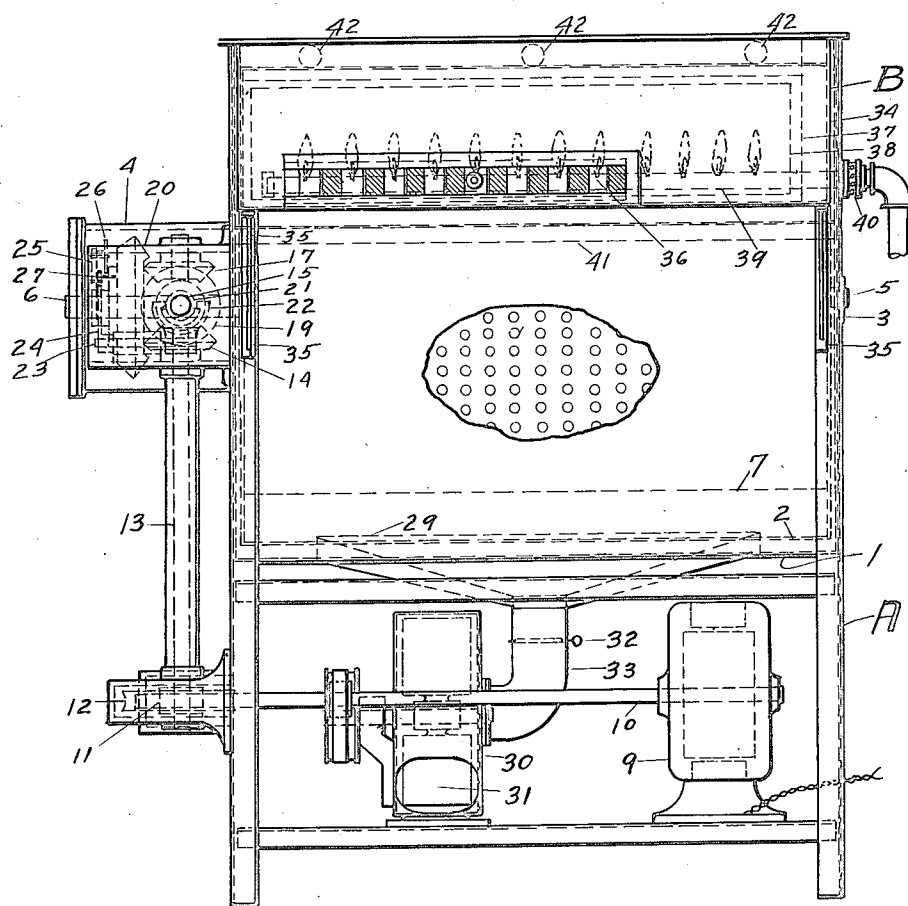


FIG. 2

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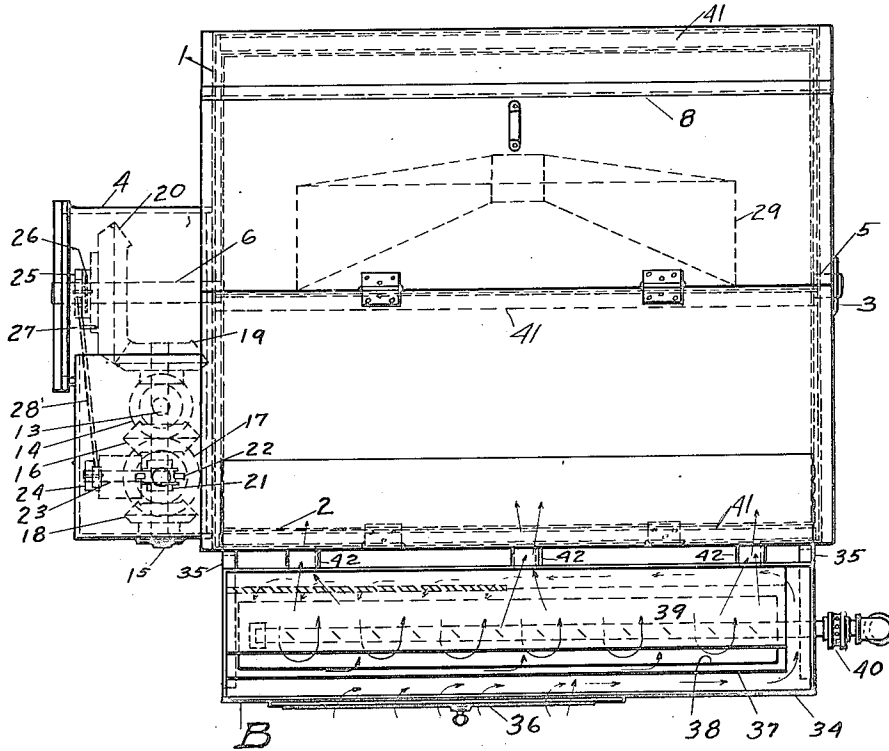


FIG. 3

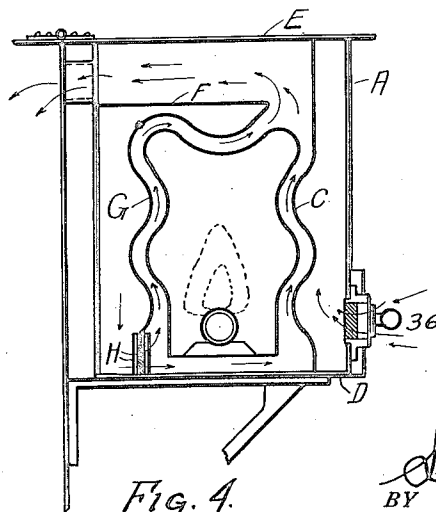


FIG. 4.

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UNITED STATES PATENT OFFICE.

SEWARD H. DAVIS, OF DETROIT, MICHIGAN.

CLOTHES-DRYING MACHINE.

Application filed February 21, 1921. Serial No. 446,623.

To all whom it may concern:

Be it known that I, SEWARD H. DAVIS, a citizen of the United States, residing in the city of Detroit, county of Wayne, State of Michigan, have invented certain new and useful Improvements in a Clothes-Drying Machine, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use same, reference being had to the accompanying drawings, which form a part of these specifications.

The object of my invention is to provide a simple clothes drying machine, whereby the clothes, after washing, may be placed inside and dried immediately without the extra labor of hanging and drying in the open air.

Another object of my invention is to provide a machine that is simple in construction, easily and efficiently operated, and can be manufactured at a low cost which will enable the drier to be sold for family use.

These several objects are secured in their preferred form by the construction and arrangement of parts as are more fully hereinafter described.

Similar parts on all drawings are marked by similar numerals or letters.

Fig. 1, is a side view of the drier showing the general arrangement of the different units and the operating mechanism.

Fig. 2, is a back view of the drier showing the relative position of the operating mechanism and the heating apparatus.

Fig. 3, is a top view showing the arrangement of the heating and circulating units.

Fig. 4, is a cross section of the heating unit showing the walls and air grates for the oven air circulation.

I will now describe more fully the detailed construction of the drier and the working parts thereof, referring to the accompanying drawings and the marks thereon.

The preferred form of the drier is substantially as shown in the drawings, consisting of a supporting frame —A— made of angle irons, placing one at each corner in a vertical position for the supporting legs, and securely fastening cross pieces thereto, for the purpose of supporting the various parts of the driving and operating mechanism, also to make a strong and rigid frame to support the drier. The corner posts, or legs, on the back are preferably made straight to

the top of the machine for the purpose of supporting the drier oven, heating the air before entering the top of the drier casing. The front supporting legs and drier walls attached thereto, are curved backward, conforming to the drier cylinder as shown in Fig. 1, for the purpose of holding the circulating air in the drier cylinder and forcing it to pass through the clothes. Inside the frame —A— is the drier casing —1—, which is securely fastened to the frame and made practically air tight by means of soldered joints. The bottom of the casing is of a circular form to fit the drying cylinder revolving therein, with the end construction of straight or vertical sides conforming to the ends of the drier cylinder. Inside the casing —1—, and supported by the bearings 3 and 4, is the drying cylinder —2—. The cylinder may be constructed either of wire screen or perforated sheet metal, and is cylindrical in form with closed ends. Journals 5 and 6 are attached to the ends of the cylinder —2—, and run in the bearings —3— and —4—, as the drum is rotated backward and forward by the operating mechanism. Inside the casing —1— and at various positions along the walls are angle bars —41—, to close the opening between the casing and the drier cylinder —2—, forcing the air through the cylinder and the clothes within. Inside the cylinder —2— are baffle strips —7—. These strips are placed at different sections of the cylinder to carry the clothes a partial revolution with the drum and allow them to fall to the bottom, thus keeping them separated and loosened so the drying air will pass freely through and make the drying process more efficient. The drying cylinder revolves in both directions, making several turns in one direction, and then the driving mechanism reverses automatically, turning the cylinder in the opposite direction, thus preventing the winding or matting of the clothes as would result if the cylinder rotated continuously in the same direction. One side of the cylinder is provided with a loose or hinged section —43— for putting in and taking out the clothes. The top of the casing —1— is made of a jointed section, hinged together at the center and the back, to allow easy access to the drier. For placing the clothes in the drier cylinder, the door —8— in front, can easily be opened without removing the top, but if access to the entire cylin-

der is desired, the entire top may be turned back on the side hinges. The drying cylinder —2— is kept in motion by the power motor —9—, installed in the base of the supporting frame —A—, and is connected to the driving shaft —10—, which in turn carries a worm wheel —11— securely fastened to the outer end. The worm wheel —11— engages the gear —12— which is keyed to the lower end of shaft —13—. At the upper end of the shaft —13— is keyed the gear —14—. Directly above the gear —14—, and at right angle thereto, is an alternating shaft —15—. Mounted loosely thereon, is gear —16—. Gear —16— meshes with the drive gear —14—. Gear —16— also meshes with the idler gear —17—, which in turn meshes with the loosely mounted gear —18—. Gears —16— and —18— revolve freely on the shaft —15—. At the end of shaft —15— and keyed thereto is drive gear —19—. Gear —19— meshes with gear —20—. Gear —20— is keyed to the driving journal —6— which operates the drying cylinder —2—. Mounted on the shaft —15—, and loosely splined thereto, is a ratchet collar —21—. Collar —21— carries notches at either end which engage the projecting pins on the face of gears 16 and 18. Engaged in the groove in center of collar —21—, is the forked rocker —22—, which is connected to the rocker shaft —23— and arm —24—. By movement of the rocker arm —24— forward, the ratchet collar —21— engages the projecting pins in the face of the gear —16—, and thus connects the power gear from the motor directly with the shaft —15—, causing the rotation of the drier cylinder —2—. Mounted on the journal —6—, but turning freely thereon, is a trip lever —25— which carries a star wheel —26— at the top thereof. The star wheel having one long point which strikes a stop pin and prevents it from making a complete turn, or revolution. Inserted in the back of gear —20— is a trip pin —27— which engages the points of the star wheel, turning it one point on each revolution of the drying cylinder. Upon making a number of revolutions equal to the number of points on the star wheel —26—, the long point on the star strikes the stop pin and carries the arm —25— past the center into its new position. By means of rod —28—, the arm —25— is connected with the rocker arm —24—, and the change in position of —25—, slides the ratchet collar —21— away from gear —16— and engages gear —18—, reversing the motion of the drying cylinder for a number of revolutions, then trips automatically by means of the star wheel and connecting arms to the ratchet collar —21—, and again reverses the motion of the drying cylinder, which continues to repeat the alternating directions of the cylinder. At the bottom of the casing —1— is an opening —29— connected directly with the exhaust fan —30—. Opening —29— is covered by a screen to prevent any thing from being drawn into the fan. The fan —30— is connected to the motor shaft —10— by means of a pulley and belt, and operated at a sufficient speed to cause a suction of the air through the heating unit —B—, down through the drying cylinder and exhausted through the fan —30— at the opening —31—. The flow of air through the fan may be regulated by means of the damper —32— in the intake pipe —33—. At the top and the back of the drier frame —A— is located the heating unit —B—. The air heater is comprised of a primary circulating box —34—, supported by means of brackets —35—. At the front side of the box —34— is an air intake grate and slide —36—. Inside of the primary box —34— is a secondary circulating box —37— of a corrugated surface. Inside the box —37— is the heating oven —38—, also of a corrugated surface and with the corrugations concentric with the corrugations on the box —37—, but at a distance therefrom to allow for the free passage of the circulating air over the heating oven. The corrugations are for the purpose of increasing the heating surface of the oven, and the efficiency of the heater. Inside the oven is the heater consisting of an ordinary gas burner, but may be of any type of heat producing unit. The gas burner herein used consists of a pipe with numerous jets located along its length, for lighting and burning the gas. Outside the oven, the gas burner is provided with an air mixer —40—, and the pipe then connected to the gas supply. The flow of gas is regulated by the ordinary valve in the feed pipe. In the primary box —37—, shown in Fig. 4, the front wall —C— opposite the air intake grate 36, extends from the base —D— to the top —E—, but is open at one end to allow the passage of air around the end of the box —37—. The top wall —F— of box —37— extends the entire length of the box, and closes same so no air can escape over the top into the drier without first passing over the oven. The air entering the grate —36—, passes around the outside of box —37— to the back side —G—, and enters the oven through the opening —H—, and is then free to circulate around the entire box —38—, as indicated by the arrows, and into the drier through the openings —42—, and through the revolving drier cylinder as it is drawn by the exhaust fan —30—.

Having fully described my drier and the working parts thereof, what I claim as my invention and desire to secure by Letters Patent is:

1. In a clothes drying machine of the character described comprising a rotatable drier cylinder, means for inclosing same,

means for operating same, an air heating unit, means for connecting same to the top of the drier casing, an exhaust fan, means for operating same, means for connecting the same to the bottom of the drier casing, means for regulating the flow of air through the exhaust fan, means for preventing any obstacle from entering the exhaust fan.

2. In a clothes drying machine comprising an inclosed, perforated, rotatable drier cylinder, means for operating same, an air heating unit, means for connecting same to the top of the drier casing, air baffle bars outside the drier cylinder to force the air through the drier and clothes, an exhaust fan, means for connecting same to the bottom of the drier casing, means for operating same to exhaust the damp air from the drier.

3. In a clothes drying machine comprising a rotatable drying cylinder, means for operating same, means for inclosing same, an exhaust fan, means for operating same, means for connecting same to the bottom of the drier casing, in combination with an air heating apparatus comprising an outer primary air box, means for entering the air therein, a secondary air box installed therein, an inclosed air heating oven installed inside the secondary box, means for circulating and heating air, and means for connecting said circulation with the top of the drier casing.

4. In a clothes drying machine of the character described comprising an inclosed, perforated, rotatable cylinder, means for operating same, an exhaust fan, means for operating same, means for connecting said fan to the bottom of the drier casing, in combination with an air heating apparatus comprising an outer primary air box, means for entering air therein, a secondary air box installed therein, means for circulating the air around the secondary box, means

for entering the air into the secondary box, means for circulating air over the heating oven, a heating unit and means for connecting same with the top of the drier casing.

5. In a clothes drying machine comprising an inclosed, rotatable drying cylinder, means for operating same, an exhaust fan, means for operating same, means for connecting same to the bottom of the drier casing, an air heating unit comprising an outer primary air box, means for entering air therein, a secondary air box installed therein, means for circulating the air around the secondary box, means for entering the air into the secondary box, means for circulating the air over the heating unit, means for regulating the flow of air through the oven and means for connecting the same with the top of the drier casing.

6. In a drying machine comprising an inclosed, rotatable drying cylinder, means for operating the same, means for connecting the same to the drier casing, an exhaust fan, means for operating same, means for connecting same to the drier, an air heating unit comprising an outer primary air box, means for entering air therein, a secondary air box installed inside the primary box and made of a corrugated surface, an inclosed oven also of a corrugated surface with said corrugations interwoven with those of the secondary air box but with an air space between them for the circulating air, means for circulating the air over the oven, means for heating the air and means for entering the air in the top of the drier casing.

In testimony whereof I, SEWARD H. DAVIS, sign these specifications.

SEWARD H. DAVIS.

Witnesses:

IDA M. DAVIS,
M. J. DIRKES.