(No Model.) 2 Sheets—Sheet 1.

J. McGLONE.

DRYING CLOSET.

No. 564,254. Patented July 21, 1896.

Fig. 1

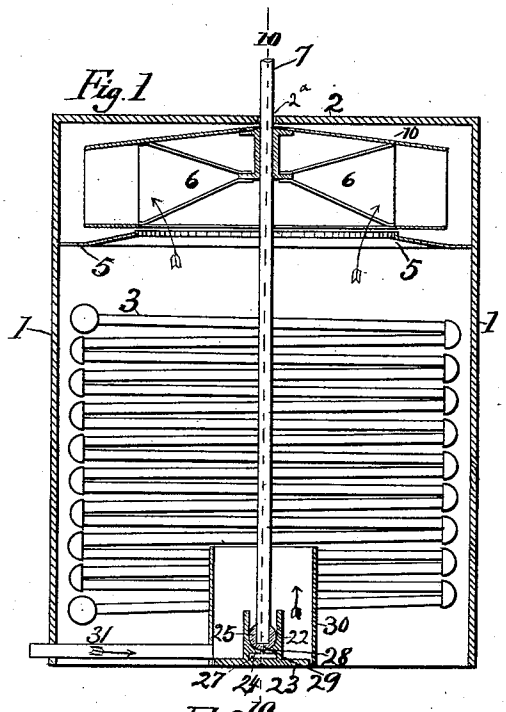


Fig. 3.

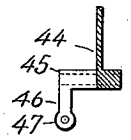


Fig. 4.

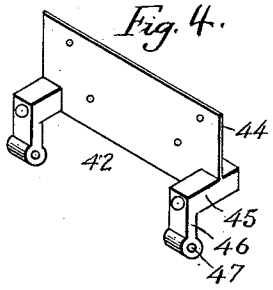


Fig. 5.

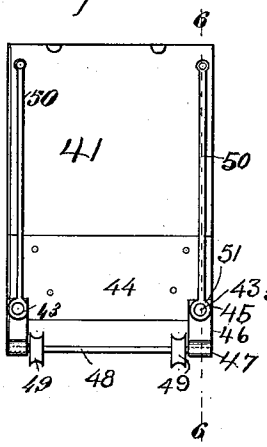


Fig. 6.

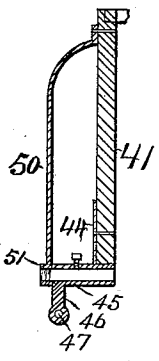


Fig. 2.

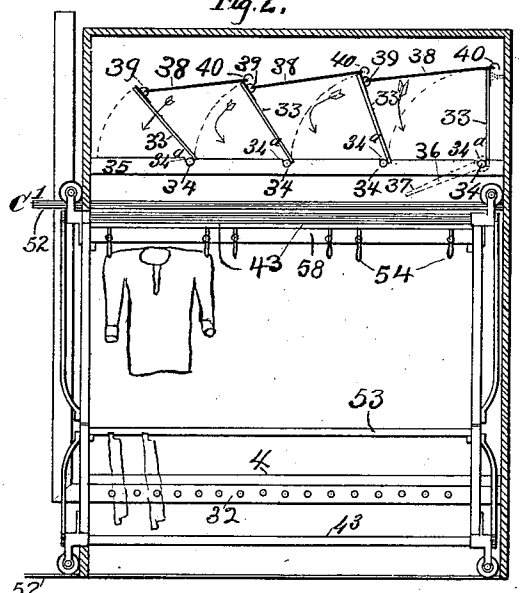


Fig. 7.

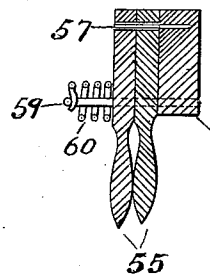
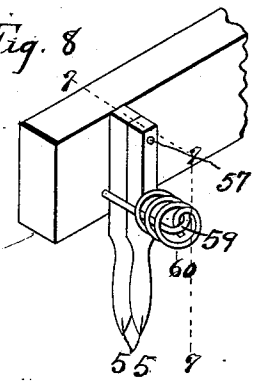
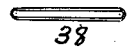


Fig. 8.



Attest,
Edward Knapp.
John W. Rothschild

Fig. 9



Inventor:
John McGlone,
by Reid & Moody,
his attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

J. McGLONE.

DRYING CLOSET.

No. 564,254. Patented July 21, 1896.

Fig. 10.

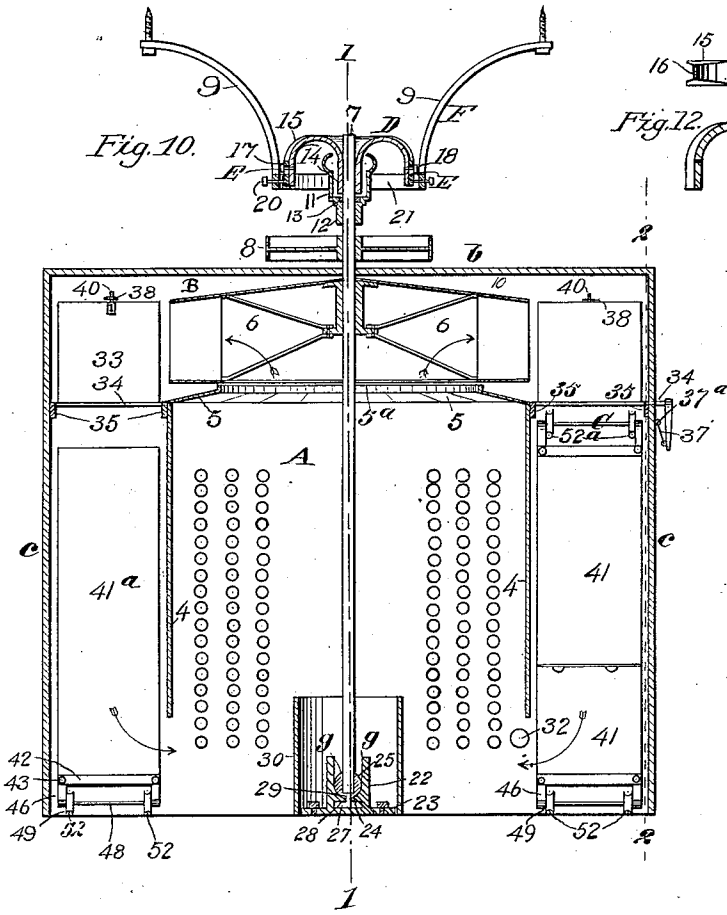


Fig. 11.

Fig. 12.

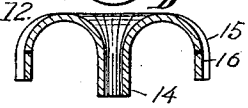


Fig. 13.

Fig. 14.

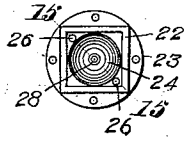
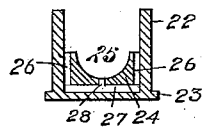


Fig. 15.



Attest:
Edward Knapp.
John W. Rothschild

Inventor:
John Mc Glone,
by Rector & Moody,
his Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN MCGLONE, OF ST. LOUIS, MISSOURI.

DRYING-CLOSET.

SPECIFICATION forming part of Letters Patent No. 564,254, dated July 21, 1896.

Application filed May 31, 1895. Serial No. 551,303. (No model.)

To all whom it may concern:

Be it known that I, JOHN MCGLONE, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Improvement in Hot Closets, of which the following is a specification.

My invention relates chiefly to improvements in closets for drying clothes, and the objects of my improvement are, first, to provide a hot closet in which a very strong blast may be used without carrying dirt from the outside, or from the bearings or other parts of the closet, to the drying-chamber, in order to dry as quickly as possible without danger of soiling the clothes; second, to provide means for evenly distributing the blast in the drying-chamber without materially obstructing its passage; third, to provide means for concentrating the blast in a certain part of the drying-chamber when so desired; fourth, to provide a solid support for the fan, independent of the frame of the hot closet; fifth, to provide continuously-lubricated and adjustable bearings for the shaft which carries the fan; sixth, to provide means for ventilating the hot closet, which at the same time keep the inside bearings of the shaft carrying the fan cool; seventh, to provide movable draws or racks for the closet, which are noiseless in their operation, and so constructed that tie-rods, which are in the way, may be dispensed with, and, eighth, to provide means for holding the clothes while drying. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of the closet along the line 1 1, Fig. 10. Fig. 2 is a vertical longitudinal section along the line 2 2, Fig. 10. Fig. 3 is a view of a detail. Fig. 4 is a view of another detail. Fig. 5 is an end elevation of a draw. Fig. 6 is a vertical section along the line 6 6, Fig. 5. Fig. 7 is a vertical cross-section along the line 7 7, Fig. 8, of a clamp used to hold clothes while drying. Fig. 8 is an isometric view of the same part. Fig. 9 is a plan view of a detail. Fig. 10 is in part a vertical cross-section along the line 10 10, Fig. 1, and in part a vertical cross-section of parts located above the top of the hot closet. Fig. 11 is an end elevation of a detail. Fig. 12 is a vertical cross-section along the line 12 12, Fig. 11. Fig. 13 is an elevation of a detail. Fig. 14 is a plan view of a bearing, and Fig. 15 is a vertical cross-section of the same part along the line 15 15, Fig. 14.

Similar letters and numerals refer to similar parts throughout the several views.

The hot closet is preferably divided into four chambers—viz., a central chamber A, a chamber B in the top of the closet, and chambers C C on each side of the chamber A. Partitions 4 4 divide the chamber A from the chambers C C, except at the bottom, to which they do not extend. The chamber A is partially divided from the chamber B by the top 5, preferably beveled to prevent lint or dirt collecting on it, substantially as shown. Through the top 5 of the chamber A there is an air-passage 5^a.

The chambers C C communicate with the chamber B at their upper ends, and with the chamber A at their lower ends. 1 1 are the end walls, *c c* the side walls, and 2 the top of the closet.

The chamber A preferably contains two radiators 3 3, which may be of ordinary construction.

Above the opening 5^a in the top 5 of the chamber A a centrifugal fan 6 is located. It may be of ordinary construction, but its upper side is preferably closed by a top 10, which is preferably beveled to prevent dirt or lint from accumulating upon it, and also to make it easier to reach and clean. The fan 6 is attached to the vertical shaft 7, from which it receives its motion. This shaft extends up through an opening 2^a in the top 2 of the closet. The opening is preferably just large enough to permit the shaft to pass through without touching. The shaft 7 turns in bearings, preferably constructed and arranged as follows: The upper bearing is preferably self-adjusting and self-oiling. An oil-cup 11 is preferably carried by the shaft, whose bottom 12 is bored to fit the shaft 7, to which it is attached. An oil-tight joint is made around the shaft, preferably by means of a ring 13, of lead or other suitable material. The cup preferably contains an annular enlargement just below its upper edge. The enlargement

is intended to catch and hold the oil in case the centrifugal force should tend to throw the oil out of the cup.

The cylindrical part 14 of the part D forms the bearing-box and extends down into the cup 11 and oil therein. The upper part is preferably funnel-shaped and provided with two arms 15 15, extending out from opposite sides thereof, and preferably extend down to a point a little below the center of the bearing. On the outside of each arm 15 a groove 16, having beveled sides, is formed, and in this groove a small block E, having beveled edges, is fitted and held to the arm by a bolt 18, passing through a slot *e* in the upper end of the plate E. The slot *e* allows the plate E to be moved vertically in the groove 16, in which it is located. The plate E has a cavity 19 near its lower end, preferably, to receive the end of a set-screw 20, for holding the bearing in place. The bearing D is preferably suspended from the ceiling or other support above by means of a bracket F, having arms 9, to whose lower end a ring 21 is attached, and through which ring the set-screws 20 pass. The casting D being pivoted on the set-screws 20 at points about on a level with the center of the bearing, allows the bearing to adjust itself to the shaft. The bearing may be raised or lowered by means of the slots 17 in the plate E.

Beneath the upper bearing and between it and the top of the hot closet a pulley 8 is preferably attached to the shaft 7, whose hub and rim are preferably connected by means of a disk, which prevents any oil from dropping from the upper bearing of the shaft 7, either onto the top of the closet or through the opening therein and into the chamber B beneath.

The lower bearing G consists of the box 22, for holding a supply of oil, and having the flange 23, by which it is bolted to the floor, and on the inside of which, a short distance from the bottom, preferably, a seat 24 for a ball 25 is formed. The ball 25 contains a bearing *g* for the lower end of the shaft. The bottom of this bearing is connected with the space below the ball by means of a hole 29. The seat 24 of the ball is connected by a hole 28, with a chamber 27 below it, and said chamber 27 is connected with the space above the ball-seat by one or more holes 26. Preferably only enough oil is used in the box 22 to properly lubricate the lower bearing. As the shaft rotates the oil is thrown outward and upward in the bearing, but is able to pass down again through the passage or passages 26 to the chamber 27. This keeps the bearing clean and perfectly lubricated. Any dirt which may come from the wear of the bearing or other source settles in the chamber 27 below the seat.

The lower bearing of the shaft 7 is preferably protected from heat from the radiators and the hot air surrounding it by a casing 30, which encircles the bearing and preferably extends up to a point higher than the bottom of the partitions 4. The interior of this casing 30 is connected with the outer air by means of a cold-air inlet 31. The top of the casing 30 is open.

I preferably use a pipe 32 for carrying off the hot air and vapor from the closet. That portion within the closet extends across the chamber A preferably close to the passage leading from one of the chambers C into chamber A, and air and vapor is preferably given access to the interior of the pipe through perforations which are preferably formed in the side of the pipe facing said air-passage. The portion of the pipe outside of said hot closet preferably extends upward to about the top or above it, as represented in Fig. 2. The draft through this outside flue and the fact that the air is driven into the perforations in said pipe by the force with which it passes from the chamber C toward the chamber A cause a continuous escape of hot air and vapor during the operation of the apparatus.

The fan 6 gives the air a rotary motion which tends to throw most of the air on each side to one end of the chamber C on that side instead of distributing it evenly. To avoid that difficulty, I place a number of plates 33 33, &c., and which are preferably rectangular, crosswise in the chamber B above each of the chambers C. These plates may be vertical, or the plates at the end toward which the air is moving may be advantageously inclined, as shown, so as to slightly obstruct the air at that end. The plate at the other extreme end is preferably vertical, but not necessarily so. The lower edges of these plates are preferably each fastened to a rod 34, the ends of which preferably rest in notches 34^a in the slats 35, which are preferably fastened to the sides of the drying-chamber, as shown. The rod 34 of the end plate, which is preferably vertical, is preferably longer than the others, and passes through the wall *c* of the hot closet to the outside, and has a lever 36 attached thereto, which may be provided with a hook 37 to engage in a screw-eye 37^a in the wall of the hot closet. The other plates are connected with the plates with which the lever 36 is connected by means, preferably, of the links 38, staples 39, and hooks 40. If desired, any number of the plates 33 may be disconnected from the vertical plate and allowed to assume a horizontal position, thus covering the whole or a part of the drying-chamber beneath, and cutting off the blast therefrom, thus concentrating the blast on the part of the drying-chamber which is not covered, or, where the whole top of one of the drying-chambers C is covered, concentrating the entire blast from the fan upon the other chamber. As will be obvious, it is necessary where the whole of the chamber C is to be closed to bring the plate 33 to which the lever 36 is attached to a substantially horizontal position as well as the other plates, and where that is done it is unneces-

sary to disconnect the plates from each other. By simply unlinking the plates from each other they may be lifted out and removed for cleansing.

Movable draws or racks are used to hang the clothes on, preferably. These draws preferably each consists of two end boards 41 41, each preferably provided with a strengthening-piece 42 across one end. The ends of the boards 41 are preferably connected by tie-rods 43, passing through the strengthening-piece 42. The piece 42 is preferably rectangular in cross-section, and has a flange 44 on one edge, which overlaps the end board to which it is connected, and is preferably bolted thereto. On each end of this part, which is preferably a casting, and at right angles thereto, there is a hollow lug 45, through which the tie-rods 43 43 pass. The object of these lugs is to give the rods a larger bearing than they otherwise would have. The lugs 45 each has cast on its outer end, or otherwise attached to it, a short arm 46, having the bearings 47, and in the bearings 47 in each pair of lugs a shaft 48, carrying rollers 49 49, is journaled. The rollers 49 are preferably keyed to the shaft 48, or attached thereto by other suitable means. The end of the boards 41 opposite that to which the rollers 49 are attached is braced by the rods 50, one end of each of which is attached to one of the rods 43, preferably by screwing it onto the end of said rod, and the other end of which is bolted or otherwise attached to the end board, substantially as shown in Figs. 5 and 6. Both ends of each draw are preferably alike.

I prefer to arrange the draws one above the other in pairs, as represented in Fig. 2. Their size or height may be adapted to the size of the articles to be dried therein. The lower one runs on a track 52, Fig. 10, and is preferably the smaller. The upper one in such cases runs on rails 52^a 52^a, whose ends, as do those of the rails in the lower track, extend out beyond the end of the chamber C, in which the draws are used. The lower draw is preferably provided with one or more bars 53, upon which collars and cuffs may be hung. These bars are preferably removably connected with the ends of the draw. If desired, the whole chamber may be occupied by a single draw, like 41^a, which preferably rests upon rails running on the floor. Where two draws are arranged as shown, one above the other, they may be used as one for drying large articles. When so used, the bars 53 are preferably lifted out of the lower draw. The rollers on which the draws run preferably fit the rails on which they run. Their bearings 47 are preferably lined with antifriction-metal to prevent them from squeaking, as it is undesirable to use oil in a hot closet for any purpose.

I prefer to hang large articles of clothing within the draws as follows: One or more bars 58 are attached to the upper ends of the end boards 41, and to these bars 58 I attach clamps which each consist of a pair of pins 55, preferably made of wood, and rounded and pointed at one end and perforated at the opposite end. The pair of pins 55, constituting the clamp, are hung on a pin 57, projecting from the bar 58, and are held against the bar and against each other by a staple 59 and a spring 60, the staple being driven into the bar over the pins and the spring preferably slipped over the staple, with one end hooked therein and the other end pressing against the pins. The rounded ends of the pins extend below the edge of the bar 58. The goods are slipped up between the pins, and are held by the tension of the spring. These clamps can be cheaply made, are handy to use, and will not tarnish the clothes like a metal clamp.

The draws are preferably drawn out through one end of the chamber in which they are respectively located. The end of the chamber is left open to permit of this, and is preferably closed by the end board or end boards of the draw or draws used therein when such draw or draws are in place, as shown in Fig. 2.

The operation of my improved closet is preferably as follows: Cold air enters the chamber A through the air-inlet 31 and casing 30, and tends to keep the bearing of the lower end of the shaft 7 cool. The air is heated in the chamber A by the radiators 3 3 or other suitable means. I prefer to always heat the air above 212° Fahrenheit, and the best results are obtained when it is heated to about 220°. The fan 6 being set in motion by means of power transmitted through the pulley 8 to the shaft 7, upon which the fan is mounted, exhausts the air from the chamber A, draws it up into the chamber B, and forces it thence down into the chambers C C. From the chambers C C it in part passes back into the chamber A, and in part escapes from the hot closet through the outlet-pipe 32. The circulation is thus made rapid and continuous, and the clothes are dried almost instantly, not simply by the ordinary slow absorption of the moisture by the air, but chiefly by rapidly heating the clothes and the water therein to a temperature above 212° and expelling the vapor or steam. When this method is followed, less ventilation is necessary than would otherwise be required, and a small hot closet is enabled to dry a large quantity of clothes.

I do not wish to be confined to the precise forms of the parts shown, as any one reading this specification would be able to vary in many ways the precise form and arrangement illustrated and described without departing from the essence of my invention. The number of drying-chambers is not essential, though I prefer to use two.

I claim—

1. The combination in a hot closet of a central air-chamber A, means for heating air located therein; a drying-chamber C at the side

of chamber A; a cold-air inlet opening into the bottom part of chamber A; the chamber B at the top of the closet; passages connecting chamber B with the tops of chambers A and C; a passage connecting the bottoms of chambers A and C; an escape-flue leading upward from near the bottom of the chamber A, and means causing the air to circulate through said chambers substantially as described.

2. The combination of the chamber A; a chamber C; a passage connecting the top of the chamber A with the top of chamber C; a passage connecting the bottom of chamber C with the bottom of chamber A; means in the chamber A heating the air; means causing the air to circulate from the top of chamber A into the top of chamber C and from the bottom of C, into the bottom of chamber A; means admitting cold air, to the lower part of chamber A; an escape-pipe 32, in part in chamber A, extending across in front of said passage leading from the bottom of chamber C to chamber A, and perforated on the side of the part in chamber A, next the chamber C, and having an upright part extending above the top of chamber A and discharging outside of the apparatus substantially as described.

3. The combination in a hot closet of a chamber, containing means heating air admitted thereto; a cold-air inlet near the bottom of said chamber; a hot-air outlet near the bottom of the hot closet; one or more drying-chambers whose tops are connected by hot-air passages, with the top of said heating-chamber, and whose bottoms are connected with the bottom of said heating-chamber; and means for forcing the hot air to circulate from said heating-chamber down through said drying chamber or chambers, and thence in whole or in part, back into said heating-chamber; substantially as described.

4. The combination of the central chamber A; means therein for heating air; an air-inlet admitting air to the bottom of the chamber; a chamber B above the chamber A; a passage for air from the top of the chamber A into the bottom of chamber B; chambers C C, opening at top into chamber B, and at one side near the bottom, into chamber A; a hot-air outlet 32; and means exhausting air from chamber A into chamber B, and forcing it thence down into chambers C C, and thence in part out through outlet 32, and in part back through chamber A; substantially as described.

5. The combination in a hot closet of the heating-chamber A; the chamber B above it; a passage through the top of chamber A into the bottom of chamber B; one or more drying-chambers, whose top or tops are connected by passages with chamber B; a fan G in chamber B, arranged above the passage from chamber A into chamber B; a vertical shaft, whose lower end is journaled in a bearing near the bottom of chamber A, and which bearing is surrounded by a casing 30, through which the cold air introduced into chamber A passes; substantially as described.

6. The combination in a hot closet of a fan forcing the air therein to circulate, supported on a vertical shaft whose upper end turns in a bearing lubricated by means of an oil-cup carried by the shaft, and into which the bearing extends; substantially as described.

7. The combination in a hot closet of the shaft 7, carrying a rotary fan, and journaled at the upper end in a bearing pivotally supported by a bracket, and having vertical play; substantially as described.

8. The combination in a hot closet of the vertical shaft 7 carrying a rotary fan, journaled at the upper end in a bearing pivotally supported, and having vertical play, and extending down into an oil-cup carried by the shaft; and a horizontal pulley secured to the shaft between the oil-cup and the top of the closet, and having its rim secured to its hub by a continuous plate; substantially as and for the purposes described.

9. The combination in a hot closet of the vertical shaft, carrying a rotary fan, and journaled at its lower end within the closet in a ball seated in a bearing and journaled at its upper end, above the closet, in a bearing hung in pivots, and having vertical play; substantially as described.

10. The combination of the shaft 7, having its lower end journaled in the ball 24 seated in the bearing 25 in a box 22, having an oil-reservoir 27 below the ball-bearing with which the shaft-bearing is connected by holes 28 and 29; and one or more passages connecting the reservoir 27 with the interior of the box 22 above the ball-bearing; substantially as described.

Witness my hand this 25th day of May, 1895.

JOHN McGLONE.

Witnesses:
W. R. CHENEY,
H. HUMPERT.