No. 684,776. Patented Oct. 22, 1901.

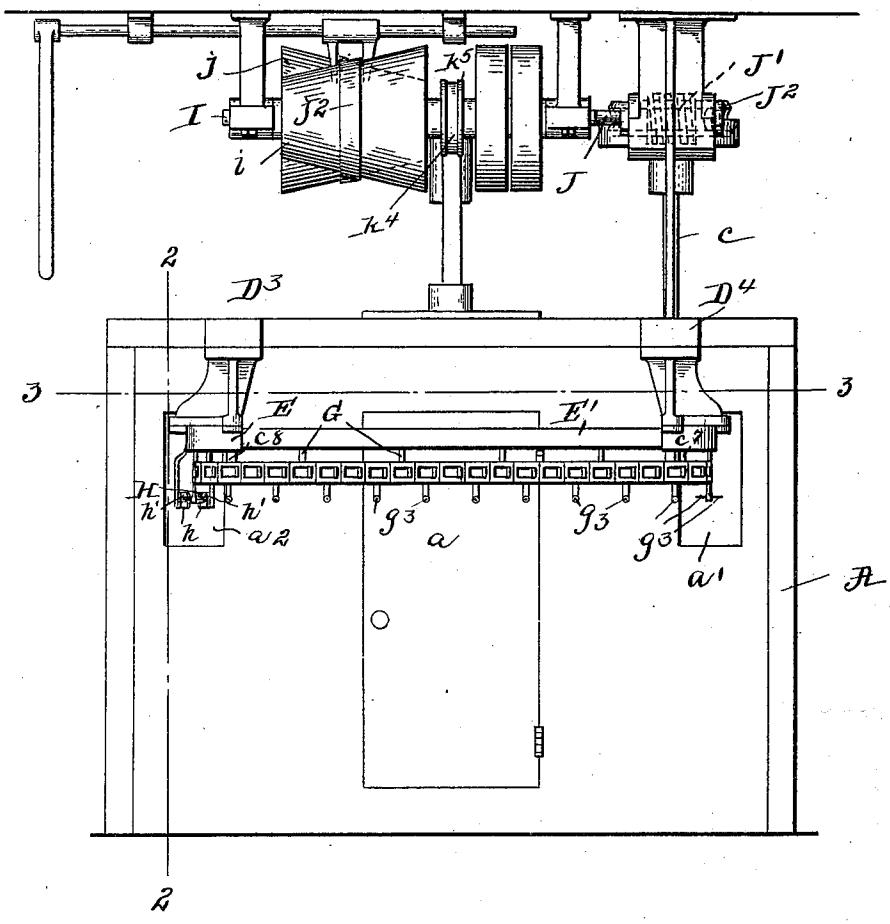
W. M. BARNES.

CLOTHES DRIER.

(Application filed July 14, 1900.)

(No Model.) 4 Sheets—Sheet 1.

FIG. 1.



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No. 684,776. Patented Oct. 22, 1901.

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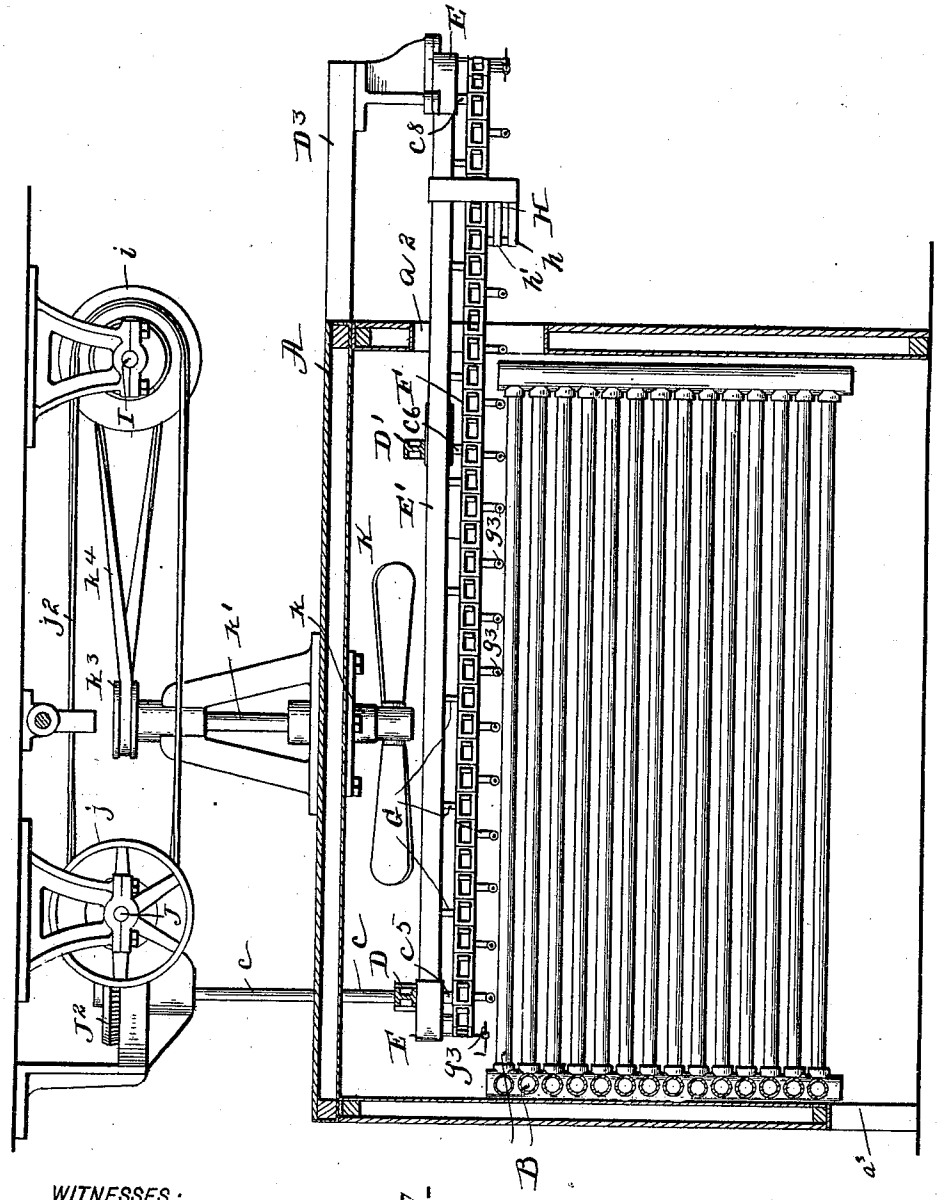


FIG. 2.

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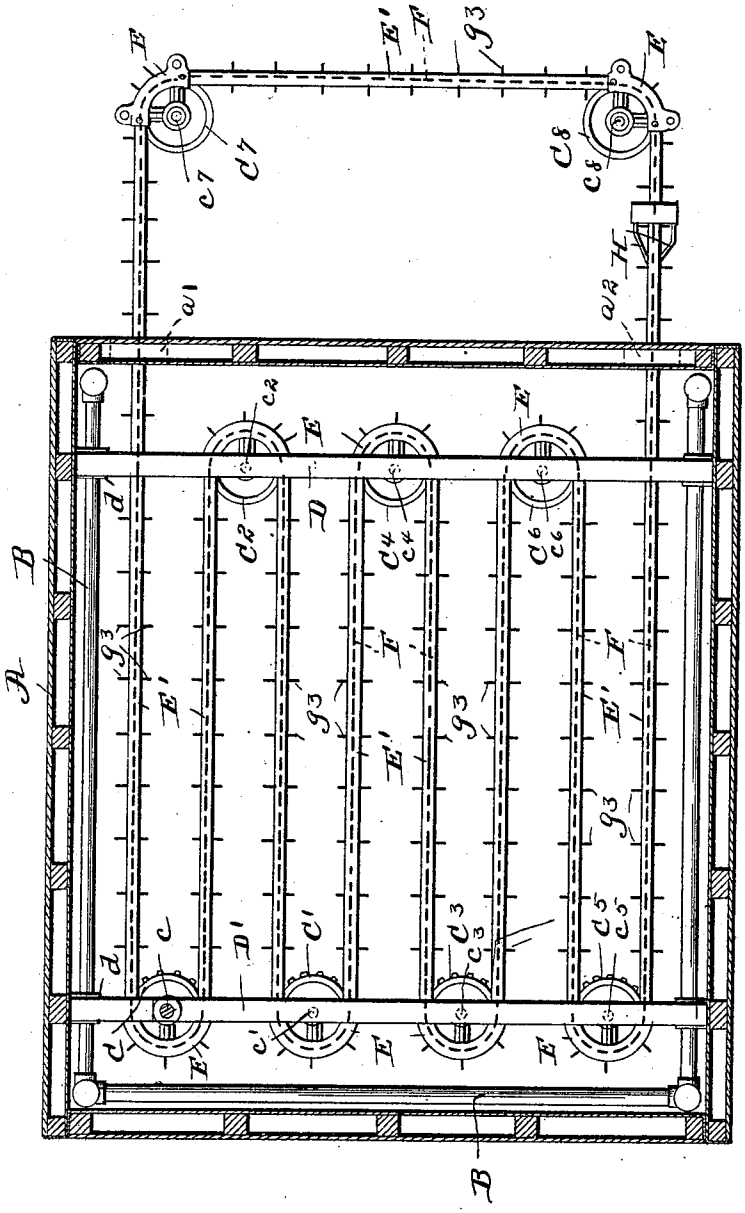
No. 684,776. Patented Oct. 22, 1901.

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(Application filed July 14, 1900.)

(No Model.) 4 Sheets—Sheet 3.



WITNESSES:
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FIG. 3.

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No. 684,776. Patented Oct. 22, 1901.

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CLOTHES DRIER.

(Application filed July 14, 1900.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 4.

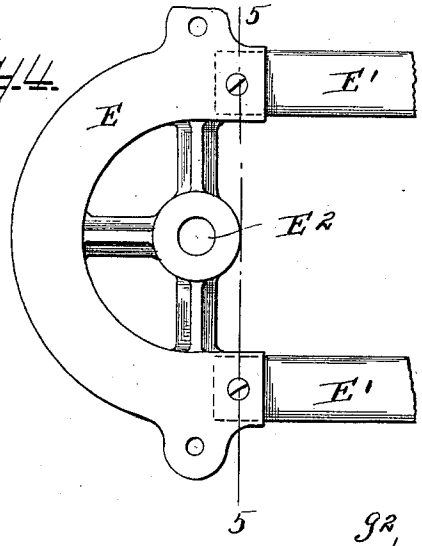


Fig. 5.

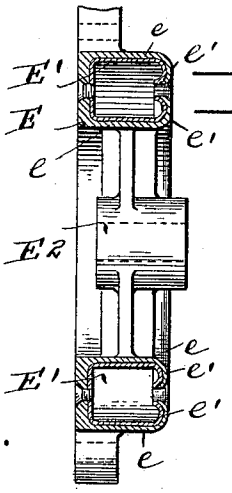


Fig. 6.

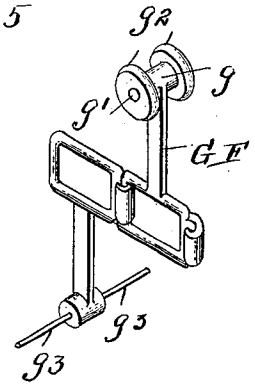


Fig. 7.

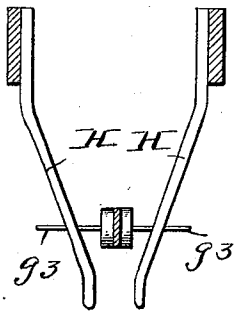
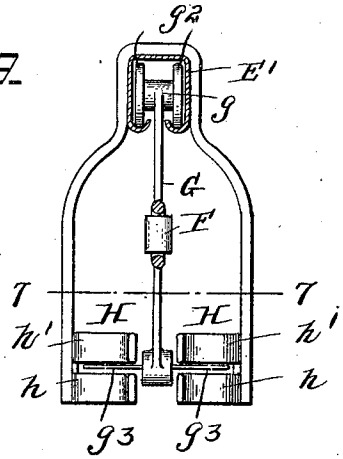


Fig. 8.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM M. BARNES, OF PHILADELPHIA, PENNSYLVANIA.

CLOTHES-DRIER.

SPECIFICATION forming part of Letters Patent No. 684,776, dated October 22, 1901.

Application filed July 14, 1900. Serial No. 23,560. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BARNES, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Clothes-Driers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification.

My invention, speaking generally, belongs to that class of driers in which the articles to be dried are carried by an endless carrier and, further, in carrying the goods secured to the endless carrier through a heated room, the goods being dried in their passage through this room.

My invention has for its object to accomplish the drying in a more thorough and certain manner.

To that end, speaking generally, my invention consists in a carrier which traverses the drying-room on edge and passes around guiding-wheels on vertical axes. By this construction any number of traverses or turns in the drying-room may be made without the guiding-wheels interfering with the articles carried by the carrier, and thus may all be at the same level in the room, whereby the articles are constantly subjected to the most efficient temperature in the room. Further, the carrier is supported from substantial vertical movement independent of the guide-wheels, so that the carrier is prevented from leaving the guide-wheels. Further, I provide pins projecting from the carrier and beyond the line of the guide-wheels for attaching the article to the carrier.

Further, my invention comprises certain improvements in the drying-room itself and the relation of the heating medium, carriers, &c., to each other whereby the best result is obtained; and, further, it consists in stripping devices which automatically remove the articles from the carriers after they have passed through the drying-room.

It further consists in certain details which will be fully hereinafter described.

I will now describe the embodiment of my invention illustrated in the accompanying drawings, although except as the same may hereinafter be specifically claimed I do not intend to limit myself to the specific details of this embodiment.

In the drawings, Figure 1 is a front view. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is an enlarged plan view of one of the curved portions of the track. Fig. 5 is a section on line 5 5 of Fig. 4. Fig. 6 is a perspective view of one of the chain-supporting trolleys and a portion of the chain. Fig. 7 is a sectional plan view of the stripper on line 7 7 of Fig. 8. Fig. 8 is a front view elevation of the same.

A is the drying-room. This room is a four-sided room provided at the front with the door a and the openings a' a^2 and on the back with the opening a^3 near the floor. The purpose of the opening a^3 is, as will hereinafter be described, to allow the damp heavy air to escape. The door a is for access to the drying-room. The opening a' is to admit a carrier into the drying-room and the opening a^2 for passage of the carrier from the drying-room. On the sides and back of this room, starting near the bottom and extending upward therefrom, are the heating-coils B. Within the drying-room and supported upon vertical axes are the guide-wheels C C^6, one of these guiding-wheels (the wheel C) being a sprocket driving-wheel. These wheels are all at the same level and are near the two ends of the room. These wheels are supported in the following manner:

D D′ are two beams extending from side to side of the room, one at each end of the room. These beams are secured to the sides of the drying-room by brackets d.. Secured to these beams above each wheel C C^6 is a curved trackway E, having downward-projecting portions e and inward-projecting portions e', forming a slotted double trackway. (See Figs. 4 and 5.) This trackway is provided with a bearing E^2 for the vertical shafts c c^6 of the wheel C C^6. Between the beams and each pulley extends a straight trackway E′, of the same construction in cross-section as the curved trackway E. This straight trackway E′ is abutted to and secured to the ends of the curved trackway E. Outside the drying-room A and in line with the openings a' and a^2 are

the guide-wheels C^7 and C^8 on vertical shafts. The guide-wheels C^7 and C^8 are secured in a manner similar to the guide-wheel C C^6—that is, beams D^3 and D^4 extend from the top of the drying-room, and to these beams are secured curved trackways E, having bearings E^2 for the vertical shafts c^7 and c^8, supporting the wheels C^7 and C^8. Straight trackways E′ extend from these curved trackways, as within the drying-room, thus forming throughout a trackway which is partially curved and partially straight.

The conveyer F which I have shown is an ordinary link-belt conveyer traveling on edge. To this conveyer F at a plurality of points are connected shanks G, having at their upper ends the hangers g, forming a bearing for the short longitudinal shafts g', to each end of which shafts is secured a roller g^2. The shank G is of such thickness that it can pass between the ends of the projections e' of the trackway, allowing the rollers g^2 to rest upon the projection e' of the trackways E and E′. In order to diminish friction, the rollers g or their shaft may be provided with the ordinary ball-bearings. At a plurality of points project horizontally from the conveyer pins g^3, one at each side and below the link proper. The conveyer G passes around the wheels C C^8, and the rollers g^2 rest in and travel along the trackways E and E′.

The goods are attached to the pins g^3 and travel through the drying-room A. Near the outlet a^2 and without the drying-room are the strippers H, one on each side of the conveyer G. These strippers are forked cams having forked ends h h' set at an angle to the travel of the conveyer, so that when the pins g^3 enter the fork the goods held by the pins are stripped off the pins.

The operation of the mechanism so far as it has been described is as follows: The goods to be dried are attached to the pins between the strippers H and the wheel C^7, and suitable motion being given to the conveyer the goods are carried into the drying-room through the opening a' and passed a number of times to and fro in the drying-room and then out to the strippers. By this construction, the conveyer being on edge and the goods supported beyond the wheels, any number of turns can be made in the drying-room, as the guiding-wheels in no way affect the operation and the conveyer may be maintained at all times at the same level in the room and at the point of most efficient temperature. Again, by the use of the tracks E and E′ supporting the chain there is no danger of the chain sagging off from the guide-wheels due to expansion by heat or from any other cause. Further, the guide-wheels and trackways are connected with each other and the conveyer is suspended from the trackways and passes around the guide-wheels. This insures that the expansion or contraction of the parts will take place together. Motion is given to the conveyer through the sprocket-wheel C, which wheel is driven in the following manner:

I is the main driving-shaft, driven in any well-known manner. Upon this shaft is the cone-pulley i. Upon the shaft J is a cone-pulley j. A belt j^2 connects the pulleys i and j. On the shaft J is a worm J′, meshing with a worm-wheel J^2 on the shaft c of wheel C. By this means the wheel C is positively driven and in turn drives the conveyer F. If necessary, more than one driving-wheel may be used.

Journaled in a hanger k, secured to the top of the interior of the drying-room A and central thereof, is the shaft k' of the fan K. The fan K is above the conveyer G and the shaft k' projects through the top of the drying-room A, having on its upper end a pulley k^3, which is connected by a belt k^4 with a pulley k^5 on the shaft I.

By the construction described it will be seen that the heating-coils are at the sides of the room and the fan above the conveyer. The air rises from the bottom along the sides, being heated by the heating-coils, and the fan forces it downward through the center to the bottom, from which it again rises, as before described, thus producing a perfect circulation. Any damp air escapes through the opening a^3, and fresh air will be admitted through openings a' and a^2.

Taking the apparatus as a whole it will be seen that the use of the conveyer on edge enables any number of traverses in the drying-room desired to be made. It will further be seen that the conveyer is supported independently of the guide-wheels and is thus prevented from sagging or leaving the guide-wheels, and the goods in no place come in contact with or are affected by the guide-wheels. Further, the arrangement of the heating-coils is at the sides of the room and the fan above the conveyer causes a perfect circulation of the heat and a complete and rapid drying. While I have shown the conveyer as a link-belt conveyer, I do not intend to limit myself to that specific form of conveyer. I also desire it to be understood that the arrangement of drying-room with the heating-coils at the sides of the room and the fan above the conveyer has advantages whether the conveyer be used on edge or flat.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In combination, a drying-room having heating-coils extending upwardly on the side thereof, a conveyer traversing said room, the central portion of said room beneath the conveyer being devoid of heating-coils and an air-circulating device in said room above said conveyer driving said air downward.

2. In combination, a drying-room having heating-coils extending upwardly on the side thereof, a conveyer traversing said room, the central portion of said room beneath the conveyer being devoid of heating-coils and an

air-circulating device in said room, substantially central of and above said conveyer, driving said air downward.

3. In combination, a drying-room having heating-coils extending upwardly on the sides thereof, a conveyer traversing said room, the central portion of said room beneath the conveyer being devoid of heating-coils and an air-circulating device in said room above said conveyer driving said air downward.

4. In combination, a drying-room having heating-coils extending upwardly on the sides thereof, a conveyer traversing said room, the central portion of said room beneath the conveyer being devoid of heating-coils and an air-circulating device in said room, substantially central of and above said conveyer, driving said air downward.

5. The combination, with a drying-room provided with heating-coils on the sides only of the lower portion of said room, of a conveyer traversing said room above said heating-coils and an air-circulating device in said room above said conveyer and substantially central of the drying-room, said circulating device driving the air in said room downward.

6. The combination, with a drying-room, provided with heating-coils on the sides only of the lower portion of said room, of a conveyer traversing said room above said heating-coils and at substantially the same level throughout, and an air-circulating device in said room above said conveyer and substantially central of the drying-room, said circulating device driving the air in said room downward.

7. In a drier in combination with a drying-room, of a plurality of guiding-wheels in said room, a conveyer on edge traversing said drying-room and guided by said wheels, an inlet opening into and exit opening from said drying-room for said conveyer, guide-wheels without said drying-room, for guiding the conveyer between said openings, horizontal pins secured to said conveyer beyond the plane of said guide-wheels projecting outwardly from opposite sides of said conveyer and cams without said drying-room in line of travel of said pins and set at an angle to said pins and adapted to strip the goods from both sets of pins.

8. In a drier in combination with a drying-room, of a plurality of guiding-wheels in said room, a conveyer on edge traversing said drying-room and guided by said wheels, an inlet opening into and exit opening from said drying-room for said conveyer, guide-wheels without said drying-room, for guiding the conveyer between said openings, horizontal pins secured to said conveyer beyond the plane of said guide-wheels and projecting outwardly from opposite sides of said conveyer and a forked cam without said drying-room in line of travel of said pins and set at an angle to said pins and adapted to strip the goods from both sides of pins.

9. In a drier in combination with a drying-room, of a plurality of guiding-wheels in said room, a conveyer on edge traversing said drying-room and guided by said wheels, an inlet opening into and exit opening from said drying-room for said conveyer, guide-wheels without said drying-room, for guiding the conveyer between said openings, horizontal pins projecting from each side of said conveyer and secured to said conveyer beyond the plane of said guide-wheels and a cam on each side of said conveyer without the drying-room and in line of travel of said pins, said cams being set at an angle to said pins.

10. In a drier in combination with a drying-room, of a plurality of guiding-wheels in said room, a conveyer on edge traversing said drying-room and guided by said wheels, an inlet opening into and exit opening from said drying-room for said conveyer, guide-wheels without said drying-room, for guiding the conveyer between said openings, horizontal pins projecting from each side of said conveyer and secured to said conveyer beyond the plane of said guide-wheels and a forked cam on each side of said conveyer without the drying-room and in line of travel of said pins said cams being set at an angle to said pins.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 7th day of July, 1900.

WILLIAM M. BARNES.

Witnesses:
M. F. ELLIS,
M. M. HAMILTON.