April 23, 1940. W. M. CISSELL 2,197,788

SOCK DRIER

Filed Aug. 12, 1938 2 Sheets-Sheet 1

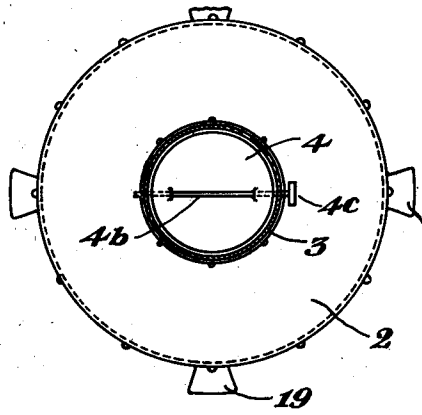


Fig. 1

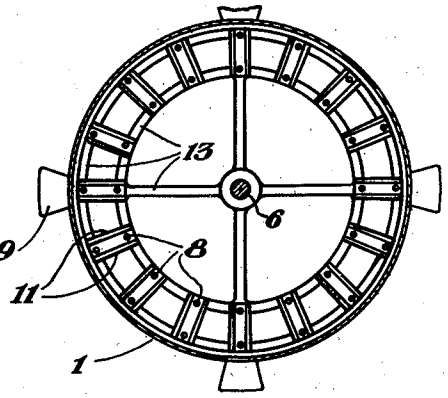


Fig. 2

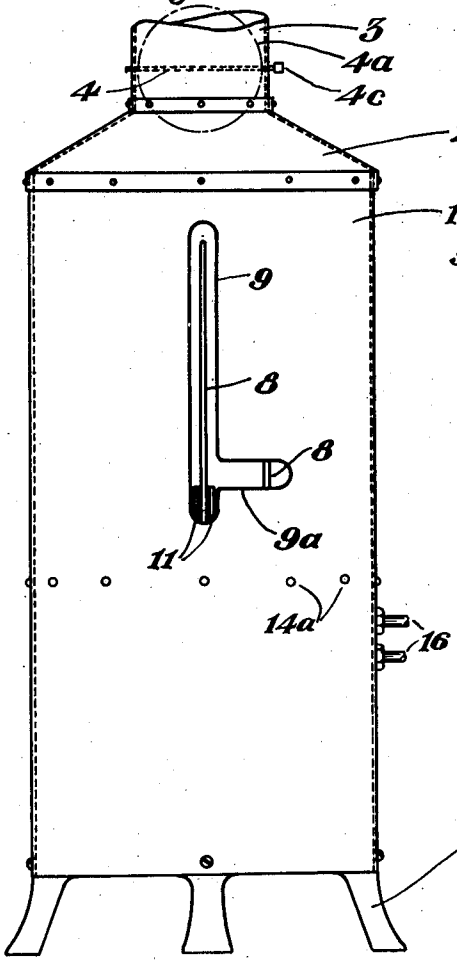


Fig. 3

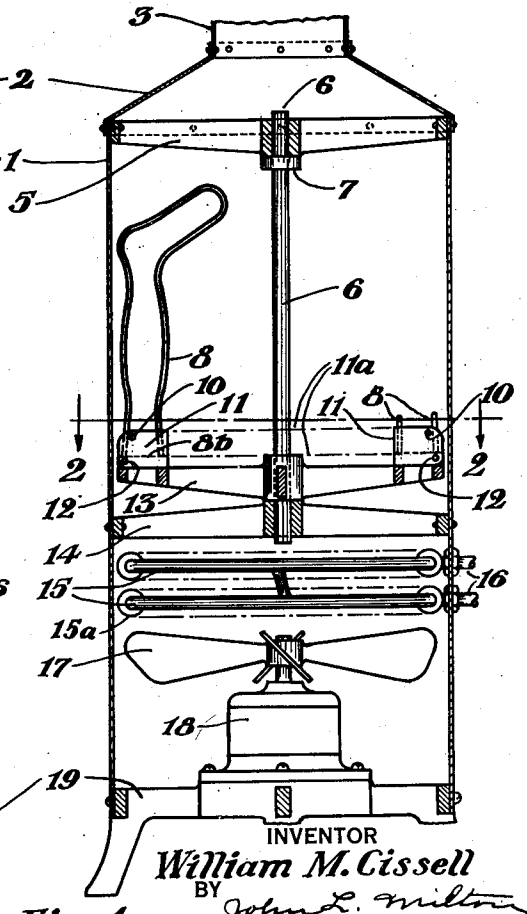


Fig. 4

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SOCK DRIER

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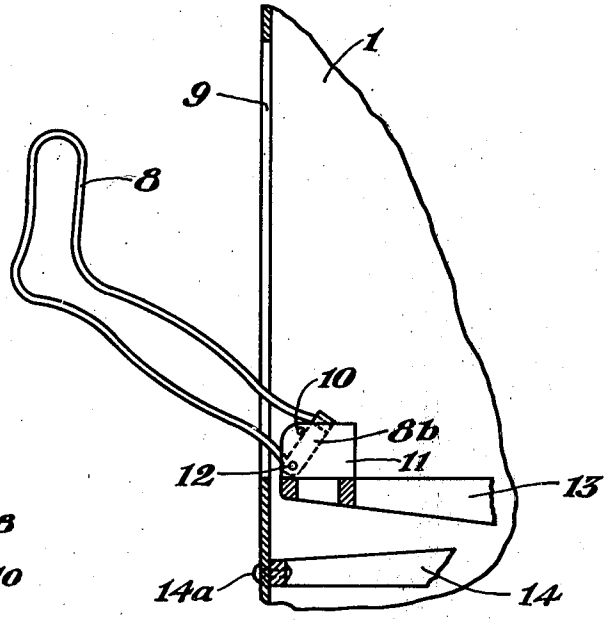


Fig.5

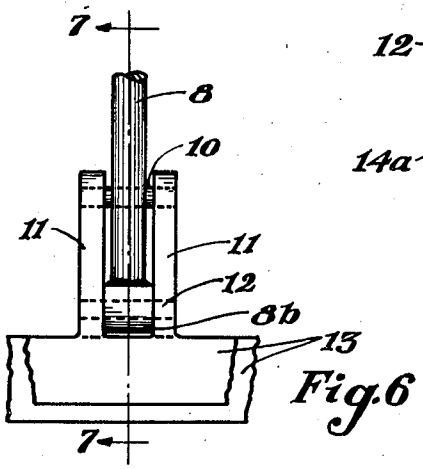


Fig.6

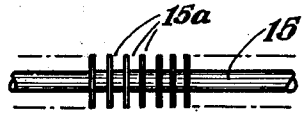


Fig.8

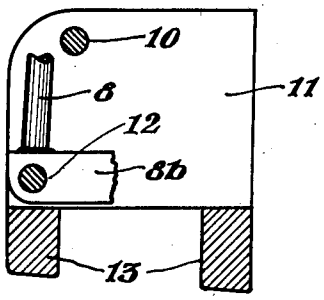


Fig.7

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2,197,788

SOCK DRIER

William M. Cissell, near Louisville, Ky.

Application August 12, 1938, Serial No. 224,436

5 Claims. (Cl. 34—12)

My invention relates to drying machines for socks, hosiery and the like, and has particular reference to improvements in the construction and operation of machines in which the socks are placed upon forms and subjected to a heated drying chamber, whereby evaporation of moisture from the socks is thoroughly effected, with incidental shaping of the socks before they are removed from the forms.

Heretofore, various types and combinations of machines have been employed for drying socks and the like on forms, but these have been extremely complicated both in construction and operation. Accordingly, the prior machines are prohibitively expensive both from the standpoint of capital investment and operating cost.

Therefore, the primary object of my invention is to provide a new and novel machine of the typified character that is labor saving and economical in use, low in initial investment, successful in operation for the purpose in view, and one that is extremely simple to construct and install.

Another object of my invention is to provide a machine in which the operator can easily withdraw a sock form from the drying chamber, remove the dried sock, replace same with a wet sock, return the form with the wet sock to the drying chamber, and then progressively advance the said form through the drying chamber as each successive form is manually advanced by the operator to withdrawal position and manipulated in the aforesaid manner.

A further object of my invention is to provide for the withdrawal and manual advancement of the forms in such a manner as to eliminate entirely any undesirable covers or doors for the opening providing access for the operator to the forms in the drying chamber.

A still further object of my invention resides in the construction and arrangement of the opening providing access for the operator to the forms in the drying chamber so as to enable the operator to have continuous and uninterrupted access to the forms in the drying chamber without affecting continuous circulation of the heated air within the drying chamber.

A further object of my invention resides in the construction and arrangement of the parts of my drying machine, so that the machine as a whole has a large capacity for drying socks, without requiring a large amount of floor space.

With the foregoing and other objects in view, my invention comprehends a machine in which a plurality of sock forms are successively and progressively manually moved through a drying chamber, and in which each form, after having completed its movement through the drying chamber, is temporarily manually withdrawn from the chamber, only while the dry sock is being removed and replaced with a wet sock.

My invention further comprehends the association of means with the drying chamber for effecting the passage and circulation of hot air therethrough, and the escape of moist air therefrom; and, finally, the cooperative assemblage of parts for carrying out the objects. I have enumerated, and the other objects that will become apparent as the accompanying description is read in connection with the accompanying drawings illustrating one preferred embodiment of my invention, in which:

Figure 1 is a plan view of my drying machine;

Figure 2 is a partial sectional view taken along lines 2—2 of Figure 4 to show the arrangement of the sock forms 8 on the rotating table 13;

Figure 3 is an elevational view of my drying machine, showing the construction and arrangement of the openings 9 and 9a, which provide access for the operator to the sock forms in the drying chamber;

Figure 4 is a partial elevational sectional view taken along the vertical center line of the machine to show the construction and relation of heating coils 15, circulating fan 17, sock forms 8 and exhaust conduit 3;

Figure 5 is an enlarged sectional view showing the manner in which the sock forms 8 are withdrawn from the drying chamber;

Figure 6 is an enlarged detail showing the construction of the pivotal mounting for the sock form;

Figure 7 is an enlarged partial sectional view taken along lines 7—7 of Figure 6 to show the construction and relation between the pivot pin 12, stop pin 10 and sock form 8; and

Figure 8 is an enlarged plan view of a portion of the heating coils 15 showing the arrangement of radiating fins 15a.

Referring to Figures 3 and 4 of the drawings, it will be observed that my drier comprises a cylindrical enclosure having a sheet metal wall member 1 and top member 2. A suitable exhaust conduit 3 is secured to the top member 2, which conduit is provided with a damper 4 for controlling the flow of moist air from the enclosure. In Figures 1 and 3, it will be observed that the damper 4 is pivotally supported in conduit 3 by a shaft 4b, and is actuated by a suitable handle 4c. In Figure 1 the damper 4 is illus-

trated in its closed position, and, in Figure 3, the dot-dash lines 4a illustrate the open position for the damper.

Referring now to Figure 4, it will be observed that the cylindrical enclosure is supported by a base member 19. The base member 19 is fashioned with cross connecting ribs, which provide a suitable support for motor 18, and further provide sufficient intake openings for conducting relatively dry air into the enclosure.

Motor 18 is employed to actuate a fan 17, which fan circulates dry air from the intake openings over heating elements 15 into the upper portion of the enclosure, which portion of the enclosure functions as a drying chamber.

In the illustrated embodiment of my invention, the heating elements 15 consist of spirally-wound heating coils, which coils are provided with radiating fins 15a as illustrated in Figure 8. The heating coils are connected to a suitable steam or hot water line via respective inlet and outlet conduits 16. While I have particularly illustrated steam heating coils, it is to be understood that many other suitable heating elements may be substituted therefor, such as electric space heaters or fuel heated hot-plates, etc.

Directly above the heating elements 15, I have provided a lower bearing member 14, which bearing member has a central bearing for shaft 6 supported by cross connected ribs, which ribs are, in turn, secured to the wall of the cylindrical enclosure by rivets or bolts 14a.

At the upper end of the cylindrical enclosure I have also provided a similar bearing member 5, which upper bearing member has a central bearing for shaft 6 supported by similar cross connected ribs, which ribs are, in turn, secured to the wall of the cylindrical enclosure by rivets or bolts.

It will be obvious that the construction of the cross connecting ribs supporting the upper and lower bearings permits a free and uninterrupted circulation of heated air within the upper portion of the enclosure.

A shaft 6 is journaled in the aforesaid upper and lower bearings; a thrust bearing 7 being secured to the shaft 6 in operative relation with the upper bearing member.

Adjacent the lower bearing a rotatable table 13 is secured to shaft 6 as particularly illustrated in Figure 2, the table 13 is constructed to allow a free and uninterrupted circulation of heated air into the upper portion of the enclosure.

With further reference to Figure 2, it will be observed that table 13 is provided with a plurality of radially arranged form supports 11—11, which supports are arranged in pairs as illustrated in Figure 6.

Figures 4 through 7 show the preferred construction of my sock or hosiery drying form. As illustrated, the form consists of a wire frame 8 bent to the required shape, and secured to a form base 8b.

Between each pair of form supports 11—11 shown in Figure 2, a sock drying form 8 is pivotally mounted by a pin 12, as illustrated in Figures 4 through 7.

Normally each sock form 8 is within the enclosure, and assumes the vertical position shown in Figure 4. With the forms in this position, the table 13 is freely rotatable.

Referring now to Figure 3, it will be observed that I have provided a relatively narrow vertical-slot 9 in the periphery of the cylindrical enclosure in alignment with the vertical position of the sock drying forms. Further inspection will also reveal that I have also provided a relatively narrow horizontal slot 9a, projecting from and to one side of the vertical slot 9.

The construction and arrangement of these slots in terms of my sock drying form constitutes one of the salient features of my invention. Thus, it is to be understood that the vertical slot 9 has a length and width sufficient only to allow withdrawal of one sock drying form from the drying chamber at a time, which length and width provides an opening having only a negligible effect on the circulation of heated air within the drying chamber.

Similarly, the horizontal slot 9a has a width sufficient to allow an operator to insert one or two fingers into the drying chamber to manually advance a form to withdrawal position in alignment with slot 9, and a length sufficient only to allow the advancement of preferably a single form at a time.

In Figure 3, a drying form 8 is illustrated in alignment with vertical slot 9, and, in Figure 5, the form is illustrated in its withdrawn position, which is accomplished by tilting the form outwardly about its pivotal axis 12.

When the form is thus tilted outwardly, a pin 10 serves to limit the outward angular movement of the drying form, as particularly shown in Figure 5. In Figures 6 and 7 the arrangement of pin 10 is shown in further detail.

Thus, with the form tilted outwardly, the operator may then remove the dry sock and replace same with a wet sock which is to be later dried within the enclosure. As long as a form is thus tilted, the table 13 is locked against rotation, as the tilted form will engage the sides of the vertical slot 9.

As soon as the form is restored to its vertical position by the operator, the operator then grips the next successive form through slot 9a, and advances the successive form into alignment with the vertical slot 9, whereupon the aforesaid operation is repeated.

Thus, as each dry sock is advanced and replaced with a wet sock, the wet socks are progressively advanced by rotation of table 13 within the drying chamber.

Therefore, I have provided my drying machine with a sufficient number of drying forms, so that with the fastest operator, a wet sock will be dried before completing its full movement of one revolution within the drying chamber.

Thus, it will be apparent that my invention resides in the production of a simple and efficient machine for successively and progressively advancing a wet article within a drying chamber, as governed entirely by the rate in which an operator can remove a dry article and replace same with a wet article, as the time and work required of the operator to rotate the form carrying table is negligible in terms of the aforesaid replacing operation. Therefore, my invention further resides in the construction of a machine in which the articles to be dried are subjected to continuous treatment, and in which the drying form is withdrawn from the drying chamber, only while and for the time required to replace the dry article with a wet article.

In the foregoing description, it is believed that the sequence of operations associated in the present invention, together with the novel feature of construction have been sufficiently expressed so that the advantages will be self evident. Therefore, I desire to point out that the

particular embodiment described is only representative of one of the many forms in which these operations and constructions may be incorporated into an efficient and practicable machine. Therefore, the right is accordingly reserved to make all such reasonable changes and variations, which fairly lie within the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In a drying machine including a stationary enclosure within which warm air is circulated for drying wet articles presented therein; a table rotatably mounted within the said enclosure; and a plurality of article carrying forms pivotally mounted on the said table for tilting radially outwardly thereof; the said enclosure having an L shaped opening in the periphery thereof substantially in alignment with the path of travel of the said article carrying forms, in which the vertical portion of the said opening is constructed and arranged to form a passageway through which each form is independently withdrawn by an operator, so that the operator can remove the dried article from the form, re-clothe the form with a wet article, and then return the re-clothed form through the said vertical portion into the enclosure, and in which the horizontal portion of the said opening is constructed and arranged to provide an auxiliary passageway through which the operator engages each successive form for advancing the same into withdrawal alignment with the vertical portion of the said opening, so that each successive form is successively manipulated in the aforesaid manner.

2. In a drying machine including a stationary enclosure having a vertical slot in the periphery thereof to provide for the ingress and egress of wet articles dried within the enclosure; a table movably mounted within the said enclosure; and a plurality of article carrying forms movably mounted on the said table for ingress and egress through the said slot; the said vertical enclosure also having a horizontal slot in the periphery thereof communicating with the said vertical slot, and having a length substantially equal to the distance between successive forms, so that the operator can engage each successive form and manually advance the same into withdrawal alignment with the said vertical slot.

3. In a drying machine including a stationary enclosure; means for heating the said enclosure; and a movable structure within the enclosure having a plurality of movable article carrying forms thereon; the said enclosure having an elongated slot in the periphery thereof through which each form is independently withdrawn out of the enclosure by an operator for removing the dried article from the form and re-clothing the said form with a wet article, and then returning the re-clothed form through the said elongated slot into the enclosure; the said enclosure also having a horizontal slot being substantially equal to the distance in the periphery thereof substantially adjacent the said movable structure, the length of the said horizontal slot between successive forms, so that the operator can engage the movable structure and advance successively each form into alignment into the said vertical slot for manipulation in the aforesaid manner.

4. A drying machine having, in combination, a rotatable table; a plurality of articles carrying forms pivotally mounted on the said table for tilting radially outwardly thereof; a casing enclosing the said forms and table having a vertical slot in the periphery thereof through which each form is independently withdrawn by an operator for unclothing and re-clothing and then returned, the said casing also having a horizontal slot therein substantially adjacent the said vertical slot, the length of the said horizontal slot being substantially equal to the distance between successive forms, so that the operator can engage each successive form and advance the same into withdrawal alignment with the said vertical slot; and means for circulating warm air within said enclosure.

5. In a drying machine having, in combination, a drying chamber having an elongated slot in the periphery thereof; and a plurality of article carrying forms movably mounted within the said chamber for successive movement into alignment with the said slot, each form also constructed and arranged for movement outwardly through the said slot into an accessible unclothing and re-clothing position, and inwardly through the said slot into a drying position, when each said form is in alignment with the said slot; the said chamber also having a horizontal slot in the periphery thereof substantially adjacent the said elongated slot, and having a length substantially equal to the distance between successive forms, so that each successive form is engaged by an operator for moving each form successively into alignment with the said elongated slot..

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