June 29, 1937. E. A. STIENEN 2,085,551

APPARATUS FOR DRYING HAT BODIES, BEAMS OF TEXTILES, AND OTHER ARTICLES

Filed May 13, 1935

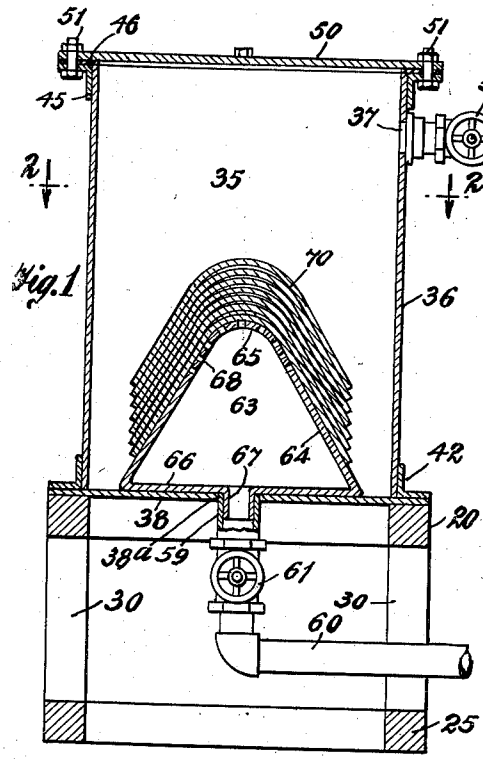

Fig. 1

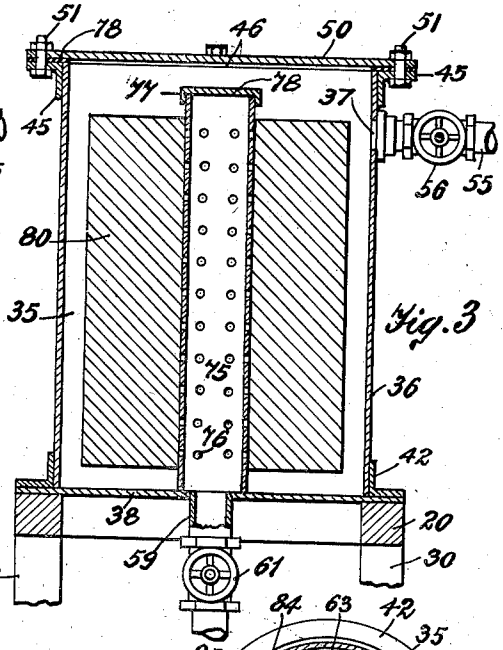

Fig. 3

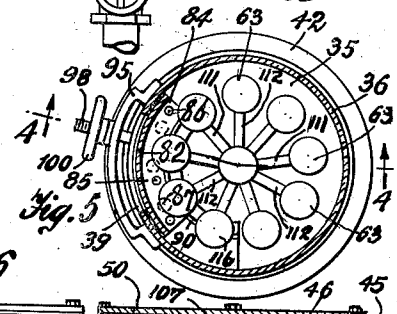

Fig. 5

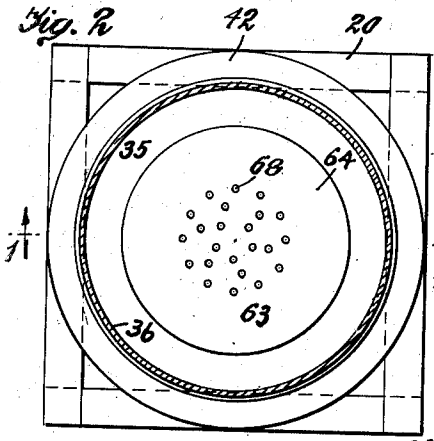

Fig. 2

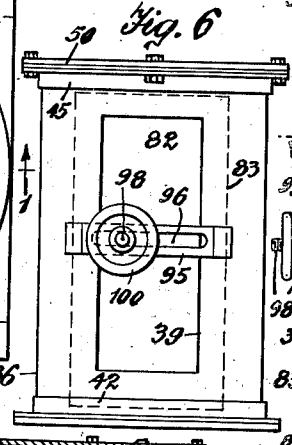

Fig. 6

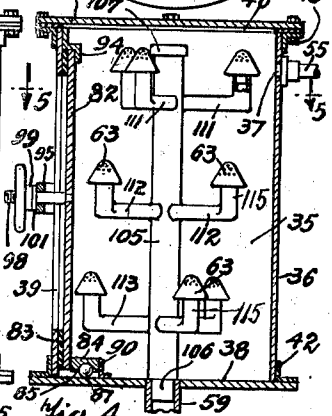

Fig. 4

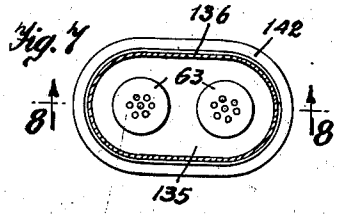

Fig. 7

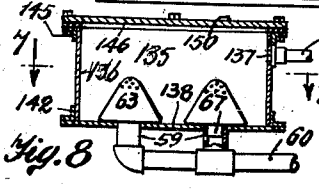

Fig. 8

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Patented June 29, 1937 2,085,551

UNITED STATES PATENT OFFICE

2,085,551

APPARATUS FOR DRYING HAT BODIES, BEAMS OF TEXTILES, AND OTHER ARTICLES

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Application May 13, 1935, Serial No. 21,127

4 Claims. (Cl. 34—26)

This invention relates to the apparatus for drying hat bodies, beams of textiles and other articles.

The object of the invention relates to the apparatus for drying various objects impregnated with water or other fluids by heated air under pressure, in which the pressure of the heated air functions as a means to maintain said objects in operative position, while having their fluids forced therefrom and then dried.

The second object of the invention relates to means for drying wet objects positioned one over the other, and by which said objects from the topmost down are dried immediately after the fluid therein has been forced out of the same.

In the accompanying drawing Fig. 1 represents a vertical section as on the line 1—1 of Fig. 2 of the dryer of the apparatus with portions in full lines, and is shown with a plurality of hat bodies in operative position; Fig. 2 shows a section of Fig. 1 on the line 2—2; Fig. 3 indicates a view similar to Fig. 1 with a beam of textile therein; Fig. 4 represents a vertical section of the dryer as on the line 4—4 of Fig. 5 with a modification and portions in full lines; Fig. 5 shows a section of Fig. 4 on the line 5—5; Fig. 6 represents a left hand view of Fig. 4 in full lines; Fig. 7 indicates a section as on the line 7—7 of Fig. 8 of a modification of the dryer and Fig. 8 indicates a section of Fig. 7 on the line 8—8.

Referring to Figs. 1, 2 and 3, a supporting structure for the dryer comprises the upper frame 20, the lower frame 25 and the vertical posts 30.

The dryer comprises the cylindrical operating chamber 35 having the vertical wall or shell 36 with its inlet openings 37. A bottom plate 38 with the opening 38*a* is secured to the shell 36 by the annular angle iron 42. To the top end of the shell 36 is fastened the annular angle iron 45. A gasket 46 of heat insulating material is positioned upon the angle iron 45.

A cover 50 bears on the gasket 46 and is fastened to the angle iron 45, by means of the bolts 51.

To the shell 36 and concentric with the inlet opening 37 is secured the inlet piping 55 with the inlet valve 56, for heated air. From the axial center of the bottom plate 38 extends the outlet piping comprising the vertical member 59 and the horizontal member 60, with the outlet valve 61. The bottom plate 38 is supported on the frame 20 of the supporting structure.

A hollow conical supporting hood 63 comprises the conical wall 64, the crown 65 and the bottom wall 66 having the outlet conduit 67 extending therefrom. Openings 68 extend through the crown 65 and through the upper portion of the wall 64. The bottom wall 66 bears upon the plate 38 and the outlet conduit 67 extends into the member 59 of the outlet piping.

A plurality of hat bodies 70 are detachably supported, in locked position, bearing against each other one over the other, upon the supporting hood 63.

Referring to Fig. 3, the supporting structure is again shown with the frame 20 and the posts 30. The cylindrical operating chamber 35 is again indicated with its shell 36 having the inlet opening 37. The bottom plate 38 is again shown with the vertical member 59 of the outlet piping. At the lower end of the shell 36 is again indicated the angle iron 42 and at its top end is again indicated the angle iron 45 with the gasket 46. The cover of the chamber 35 is again shown at 50 with the bolts 51. The inlet piping 55 is again indicated with its valve 56. In the member 59 of the outlet piping is again shown the valve 61.

In this instance a beam of textile is indicated with its vertical core 75 having the openings 76 through its wall. A detachable cap 77 with the gasket 78 is supported upon the top end of the core 75. The textile fabric 80 is wound around the core 75. The bottom end of the core 75 is supported upon the bottom plate 38 over the member 59 of the outlet piping of the operating chamber 35.

To operate the dryer indicated in Figs. 1, 2 and 3, the cover 50 is removed and the hat bodies 70 are detachably supported in locked position one over the other upon the hood 63, after which the cover is fastened in place. The heated air under pressure enters the operating chamber 35 through the inlet piping 55. The pressure of the heated air maintains the hat bodies 70 in clamped position on the conical shaped supporting hood 63. The pressure of the air forces the water out of said bodies 70 which flows through of the outlet piping. As soon as the water has been driven from the hat bodies 70, the drying of the same begins. After the said hat bodies 70 have been dried the cover 50 is detached from the operating chamber 35 and the said hat bodies 70 are removed from said chamber.

Referring to Fig. 3 the heated air enters the winding of the textile fabric 80, flows through the openings 76 of the core 75 and is discharged through the outlet piping of the operating chamber.

Referring to Figs. 4, 5 and 6, the cylindrical operating chamber **35** having the shell **36** is again shown with its inlet piping **55**, and also has indicated in its shell **36** the door opening **39**. The bottom plate **38** of the chamber **35** is again shown with the member **59** of the outlet piping. The lower angle iron is again indicated at **42** and the top angle iron is again shown at **45**. The gasket is again shown at **46** and the cover is shown at **50**. The inlet piping is shown at **55**.

An arcuate shaped sliding door indicated at **82** is provided for the door opening **39**. The door **82** on its outer face has fastened thereto the gasket **83**. To the lower end of the door **83** is fastened the castor housing comprising the members **84** and **85** which are fastened to each other by the screws **86**. Balls **87** are rotatively supported in the castor housing. To the bottom plate **38** is fastened the arcuate guide angle iron **90**, which bears against the castor. To the upper end of the shell **36** is fastened the arcuate guide angle iron **94** which bears against the upper end of the door **82**. To the outer face of the shell **36** is fastened the arcuate guide bracket **95** having the guide opening **96**. A bolt **98** extends from the door **82** through the guide opening **96**. A nut **99** has integral therewith the operating hand wheel **100** and is in threaded engagement with the bolt **98**. A washer **101** encircles the bolt **98** and bears between the bracket **95** and the nut **99**. The door is clamped in closed position by means of the nut **99** and the bolt **98**, and if the said door is to be opened the nut **99** is slightly unscrewed, when said door can be moved by bearing on the wheel **100**.

Within the operating chamber **35** is detachably positioned the hollow column **105** which at its lower end has extending therefrom the outlet pipe **106**, smaller in diameter than the column, that leads to the member **59** of the outlet pipe, and the upper end of said column is provided with the cap **107**. From the column **105** extend a plurality of tiers of three supporting arms **111**, **112** and **113**. The said arms **111**, **112** and **113** are preferably disposed in staggered relation with one another. Each of said supporting arms has integral therewith the vertical inlet end **115**. Upon each inlet end **115** is supported one of the hollow conical supporting hoods **63**.

To operate the dryer indicated in Figs. 4, 5 and 6, the door **82** is opened and the hat bodies **70** are positioned upon the supporting hoods as already described, after which the door **82** is closed. The heated air enters the operating chamber **35** through the inlet piping **55** and forces the water from said hat bodies **70**. The water forced from the hat bodies flows down the column **105** into and through the member **59** of the outlet piping to be discharged, and the heat of the heated air dries said hat bodies as already described.

Referring to Figs. 7 and 8, the operating chamber is indicated at **135** with the oval shaped shell **136**. The bottom plate is shown at **138**, with a pair of the members **59** of the outlet piping. The angle irons for the shell **136** are shown at **142** and **145**. The gasket for the top end of the operating chamber **135** is shown at **146** with the cover **150**. The inlet opening for the operating chamber **135** is shown at **137** with the inlet piping **155**. The conical supporting hoods **63** are again shown with the outlet conduits **67**. Upon the hoods **63** the hat bodies **70** are positioned as before described. The horizontal member of the outlet piping is again shown at **60**. In this modification instead of the supporting hoods **63**, a pair of beams with the windings of fabric **80** may be substituted. The operation of the dryer with the operating chamber **135** is similar to that described for the dryer shown in Figs. 1, 2 and 3.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described my invention, I claim:

1. In a dryer the combination of an operating chamber having a bottom wall with an opening, outlet piping for the operating chamber, a vertical member for the outlet piping extending from the opening in said bottom wall, a hollow conical shaped supporting hood in said chamber, said hood having openings through its conical wall at the upper portion thereof, said supporting hood having a bottom wall, an outlet conduit extending from the bottom wall of the hood, said conduit extending into the vertical member of the outlet piping and piping for heated air leading to said operating chamber, said conical shaped supporting hood adapted to support objects to be dried in locked position and bearing against each other one over the other.

2. In a dryer the combination of an operating chamber having a vertical wall and a bottom wall with an opening, a door for an opening in said vertical wall, outlet piping for the operating chamber, a vertical member of said outlet piping extending from the opening in said bottom wall of the chamber, a hollow column in said operating chamber, an outlet pipe extending from the lower end of said column of smaller diameter than the column and extending into the vertical member of the outlet piping of the operating chamber, a plurality of supporting arms extending from said column, a vertical inlet end for each of said supporting arms, a plurality of hollow conical shaped supporting hoods in said chamber, each hood having openings in its wall at the upper portion thereof, each hood having a bottom wall with an outlet conduit, each of the outlet conduits of the hoods supported in one of the inlet ends of the supporting arms and piping for heated air leading to the operating chamber.

3. In a dryer of the character described, the combination of a cylindrical operating chamber having a door opening in its cylindrical wall and having an opening in its bottom wall, an arcuate shaped sliding door coacting with the door opening in the cylindrical wall of the chamber, a caster housing extending from the lower end of the door, balls rotatively supported in the caster housing and bearing upon the bottom wall of the operating chamber, an arcuate guide angle secured to the bottom wall of the said chamber and bearing against said caster housing, an arcuate guide angle extending from the wall of the chamber and bearing against the upper end of the door, means to detachably clamp said door against the cylindrical wall of the chamber to close the door opening therein, means to support hat bodies and the like in the operating chamber, means to lead heated air into the chamber and outlet piping extending from the opening in the bottom wall of the chamber to conduct water from the latter.

4. In a dryer of the character described, the combination of a cylindrical operating chamber, a wall for the chamber having a door opening, a bottom wall for the chamber, an arcuate shaped sliding door coacting with the door opening in the

wall of the chamber, means to maintain said door in operative position when moved, an arcuate guide bracket extending from the outer face of the wall of the operating chamber over the door opening therein, said bracket having a guide opening, a bolt extending from said door through said guide opening, a nut in threaded engagement with said bolt, an operating hand wheel extending from said nut, the nut and bolt coacting to detachably clamp said door in closed position, means to support objects to be dried in the operating chamber, means to lead heated air into the chamber and means to conduct water from said chamber.

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