March 9, 1954 M. G. HINNEKENS 2,671,278

STEAM HEATED CYLINDER

Filed Nov. 23, 1949 2 Sheets-Sheet 1

Fig 1

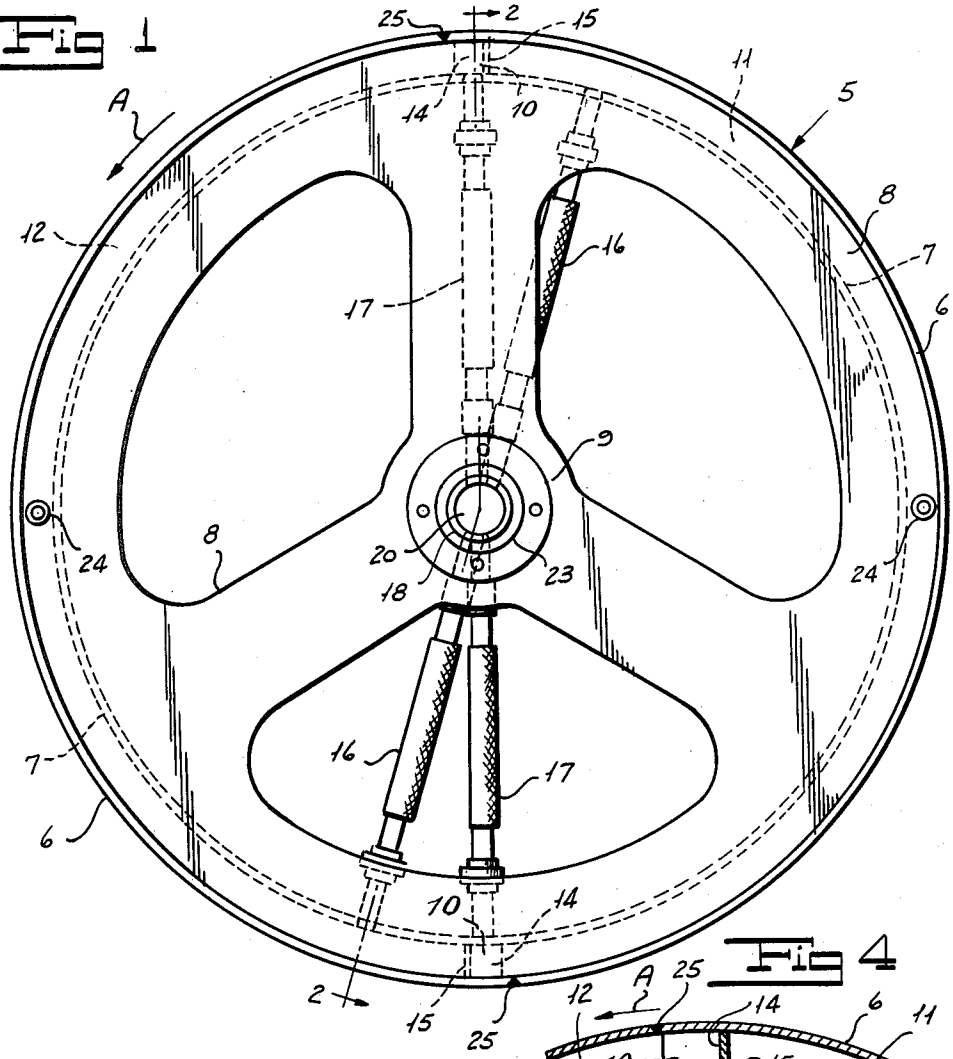


Fig 4

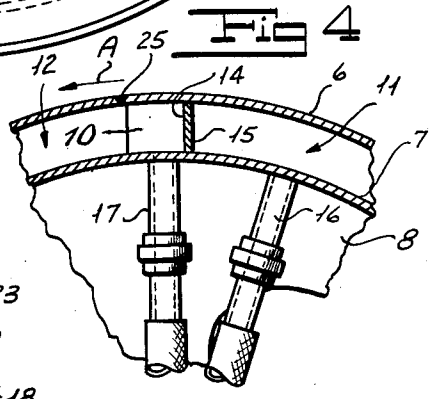
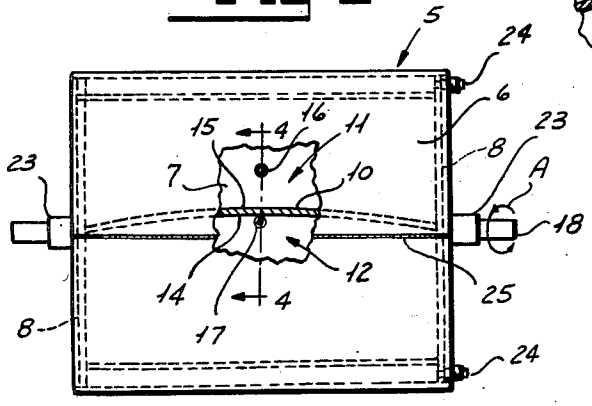


Fig 3



INVENTOR.
MAURICE G. HINNEKENS
BY
Robert F. Beck
ATTORNEY

March 9, 1954 M. G. HINNEKENS 2,671,278

STEAM HEATED CYLINDER

Filed Nov. 23, 1949 2 Sheets-Sheet 2

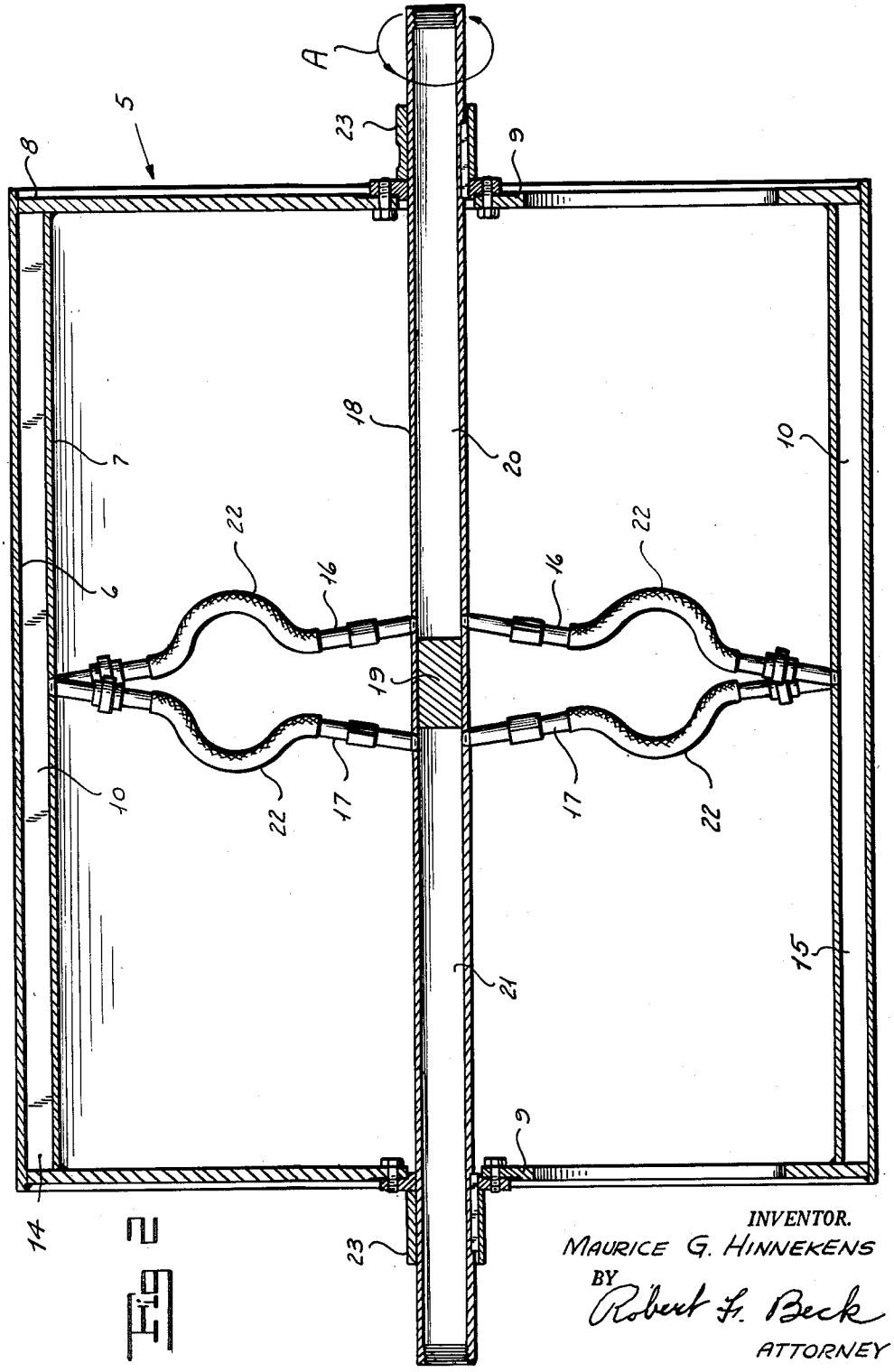


Fig. 2

INVENTOR.
MAURICE G. HINNEKENS
BY
Robert F. Beck
ATTORNEY

Patented Mar. 9, 1954 2,671,278

UNITED STATES PATENT OFFICE

2,671,278

STEAM HEATED CYLINDER

Maurice G. Hinnekens, Glen Rock, N. J.

Application November 23, 1949, Serial No. 129,029

2 Claims. (Cl. 34—124)

1

My invention relates to textile treating or finishing and more particularly to steam heated drums or cylinders employed in ironing or drying machines, many of which are known in the trade as Palmer units.

One of the objects of my invention is to provide a steam heated cylinder for incorporation within a Palmer unit or the like and which is equipped with means for supplying steam in a manner to heat the outer peripheral wall of the cylinder together with means for removing water from the cylinder which is occasioned by condensation.

Another object of my invention resides in a method of fabricating a cylinder of the above-described character in a manner to provide the same with a plurality of steam chambers defined by scoop partitions functioning to facilitate removal of the water.

An important object of my invention is to provide a cylinder of the foregoing described character which is simple in construction, efficient in operation, durable in use, economical in manufacture and capable of being installed in units already in use without substantial modification.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawings from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Figure 1 is an end elevation of a cylinder constructed in accordance with my invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a top plan view of the cylinder on a reduced scale with a portion of the outer wall being removed.

Figure 4 is an enlarged detail sectional view taken on the line 4—4 of Figure 3.

As illustrated in the drawings, there is provided a cylinder 5 comprising a pair of spaced shells defining cylindriform outer and inner walls 6 and 7, respectively, having their coincident ends connected and sealed together by radial end walls or bands 8 constituting the rims of spiders formed with hubs 9 connected to the bands by spokes. A pair of radially oppositely disposed partitions 10 extend longitudinally between the walls 6 and 7 and are connected to the latter

2

and the bands 8 to define a pair of steam chambers 11 and 12, it being understood that the partitions 10 are connected to the walls 6, 7 and 8 in a manner, for instance, by welding, to seal one chamber from the other.

The partitions 10 are longitudinally bowed between their ends to provide each partition with incurvated and recurvated side faces 14 and 15, respectively, as clearly illustrated in Figures 3 and 4 of the drawings. In spaced relation and in somewhat close proximity to the recurvated faces 15 of the partitions 10, the inner wall 7 is provided with centrally disposed openings in which are secured the outlet ends of supply pipes 16 whereby steam is supplied to the chambers 11 and 12, while in immediate proximity to the incurvated faces 14 of the partitions 10, the wall 7 is provided with centrally disposed openings in which are secured the inlet ends of drain pipes 17 to effect draining of water from the chambers, as hereinafter more fully described.

The hubs 9 have extending therethrough and in fixed relation therewith a hollow shaft 18 having its bore provided with a plug 19 intermediate the hubs 9 and which plug 19 functions to divide the shaft into steam inlet and water outlet conduits 20 and 21 to which are connected the inner ends of pipes 16 and 17, respectively, whereby communication is established between the conduits and the chambers 11 and 12. The pipes 16 and 17, intermediate their ends, have incorporated therein flexible sections, for instance, hoses or the like 22 to facilitate connecting them between the chambers and the conduits 20 and 21.

The end sections of the shaft 18 have fixed thereto, adjacent the hubs 9, suitable collars 23 with one of the collars adapted to have keyed thereon a suitable gear connected to a drive gear for effecting rotation of the cylinder, for instance, in the direction indicated by the arrow A. The end sections of the shaft 18 are also adapted to be mounted in suitable bearings and have connected thereto rotary unions effecting connection of the conduits 20 and 21 with a source of steam supply and a siphoning or negative pressure creating apparatus, respectively. One of the end walls 8 is equipped with a pair of vacuum or negative pressure relief valves 24 for effecting communication between the atmosphere and the chambers 11 and 12, respectively, each of the valves operating in response to a predetermined pressure within the respective chamber whereby the pressure therein is maintained above a preestablished amount to preclude collapsing or distortion of the walls.

In operation, assuming the cylinder is rotated in the direction of the arrow A, steam is introduced into the chambers 11 and 12 through the pipes 16 and conduit 20 and which steam serves to highly heat the wall 6 for drying and/or ironing textile material trained thereabout. As the steam condenses, during rotation of the cylinder, the water within the chambers will flow downwardly toward the lowermost partition and be siphoned therefrom through the adjacent pipe 17 and the conduit 21, each of the partitions serving, due to its arcuate configuration, to direct the water towards the center of the partition to facilitate draining of the lowermost chamber during rotation of the cylinder.

In order to facilitate the fabrication of the cylinder, particularly the installation of the partitions 10, the shell or outer wall 6 initially comprises a pair of semi-cylindrical portions which are assembled together about the wall 7 and between the walls 8 after the partitions 10 have been arranged and welded to the walls 7 and 8. When the partitions 10 have been welded to the walls 7 and 8, one of the portions of the outer wall 6 is disposed over the walls 8 in spaced relation with the wall 7 and with one of its ends extending over and slightly beyond one of the partitions 10. When one portion is thus assembled, the end, extending over the partition, has its underface welded to the partition to secure the end in fixed and sealed relation with the partition, the opposite end of the portion being left free for outward displacement from the other partition to permit the other portion to be similarly assembled and welded to the other partition. When the portions are thus welded to the respective partitions, their free ends are brought into abutting relation with and welded, as at 25, to their fixed ends, thereby, forming the continuous outer shell or wall 6, the latter, of course, being welded to the walls 8. By this novel method, I am enabled to provide the cylinder with a plurality of steam chambers for highly heating the outer wall and to utilize the partitions, which define the chambers, as scoop partitions to facilitate drainage of water occasioned by the condensation of steam within the chambers.

Without further elaboration, the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and subcombinations.

It is obvious that the invention is not confined to the herein described use therefore as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles involved which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What I claim is:

1. A rotary cylinder having spaced cylindrical inner and outer walls and end walls connecting said first mentioned walls together, a plurality of partitions secured between said walls and coacting therewith to define steam chambers between said inner and outer walls, and a pair of inlet and outlet conduits connected with each of said chambers for supplying the latter with steam and removing condensation therefrom, respectively, said partitions being bowed between their ends and each provided with side recurvated and incurvated faces with the latter serving to direct condensation towards the center of said incurvated face during rotation of said cylinder, said outlet conduits having their inlets communicating with said chambers through said inner wall in immediate proximity to and centrally of said incurvated faces.

2. A rotary cylinder having spaced cylindrical inner and outer walls and end walls connecting said first mentioned walls together, a plurality of partitions secured between said walls and coacting therewith to define steam chambers between said inner and outer walls, a hollow shaft axially extending through said cylinder and connected to said end walls for rotating said cylinder and formed between its ends with oppositely extending inlet and outlet conduits, pipes connecting each of said conduits with each of said chambers for supplying the latter with steam and removing condensation therefrom through said conduits respectively, said partitions being each provided with a side incurvated face serving to direct condensation towards the center of said face during rotation of said cylinder, said pipes connected to said outlet conduit having their inlet ends communicating with said chambers through said inner wall in immediate proximity to and centrally of said faces.

MAURICE G. HINNEKENS.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
177,205	Cary	May 9, 1876
700,776	Hunting	May 27, 1902
970,622	Graham	Sept. 20, 1910
1,248,830	Dunham	Dec. 4, 1917
1,320,893	Murray	Nov. 4, 1919
1,483,343	Gladin	Feb. 12, 1924
1,884,727	Kermer	Oct. 25, 1932
1,899,256	Brannen	Feb. 28, 1933
2,433,121	Hornbostel	Dec. 2, 1947
2,486,719	Messinger	Nov. 1, 1949

FOREIGN PATENTS

Number	Country	Date
17,946	Great Britain	1898
17,564	Great Britain	1908
668,025	Great Britain	Mar. 12, 1952
350,718	France	Apr. 18, 1905
531,605	Germany	Aug. 13, 1931

OTHER REFERENCES

Paper Trade Journal—Industrial Development Section; January 20, 1949, pages 16 and 17.