Jan. 11, 1944. E. D. PURKETT 2,339,030

ARTICLE CONDITIONING SHAKE-OUT TUMBLER

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Fig. 1.

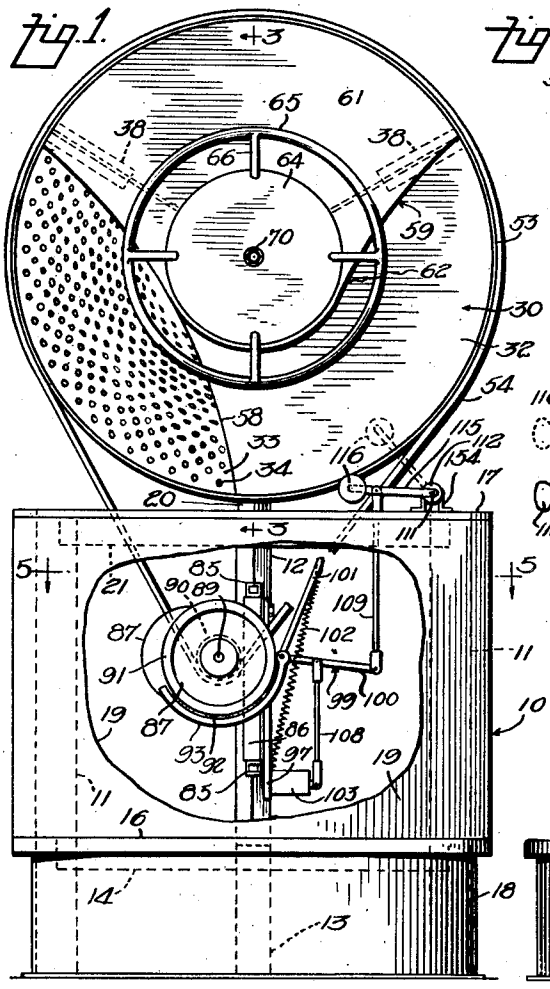
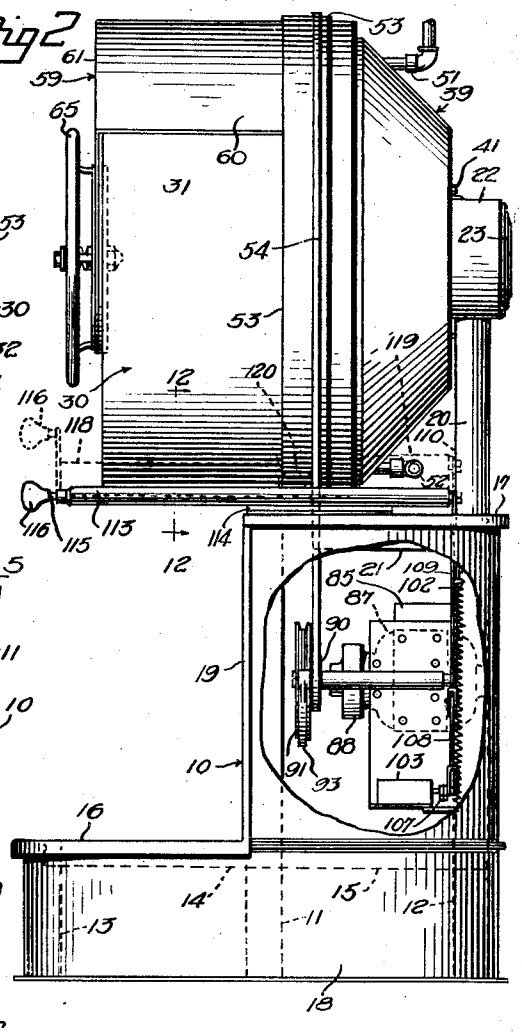


Fig. 2



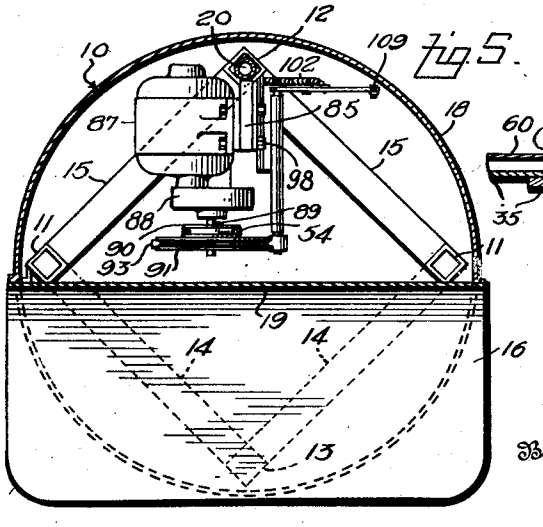
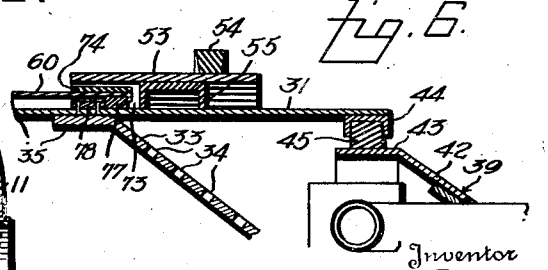


Fig. 5.

Fig. 6.



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Fig. 3.

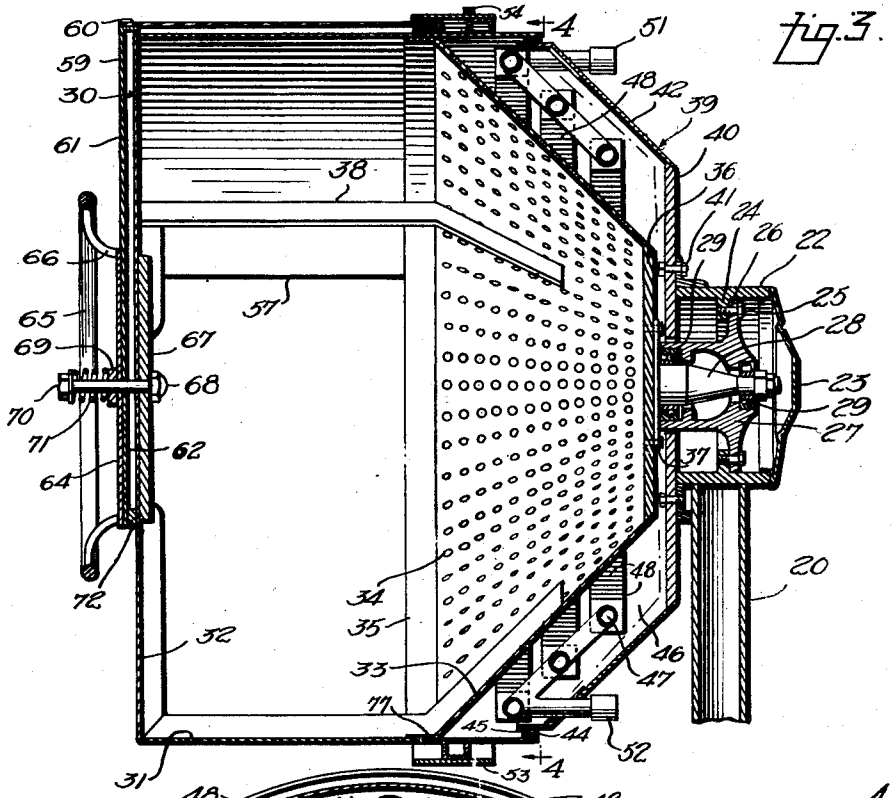
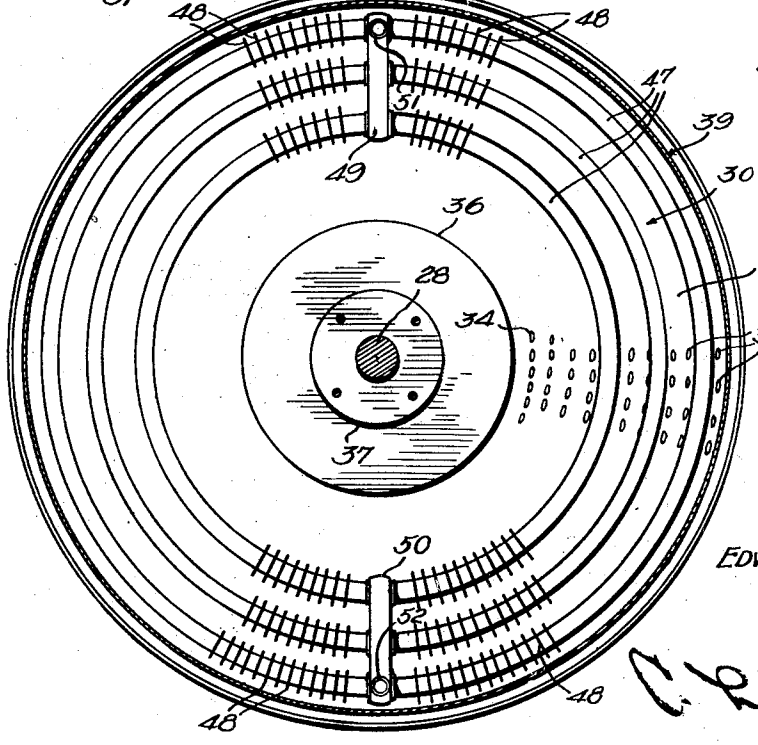


Fig. 4.



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Fig. 7.

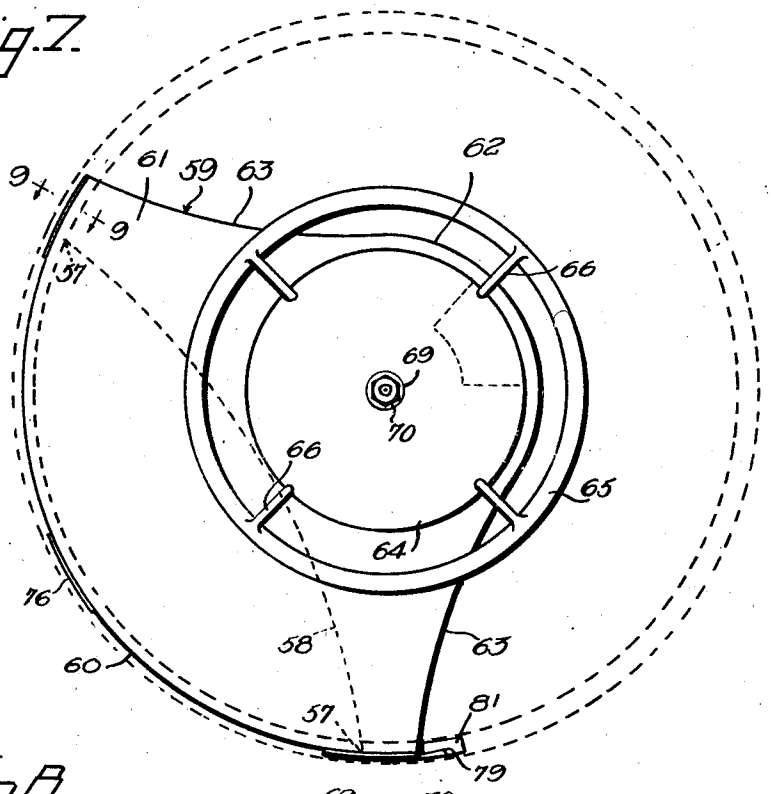


Fig. 8.

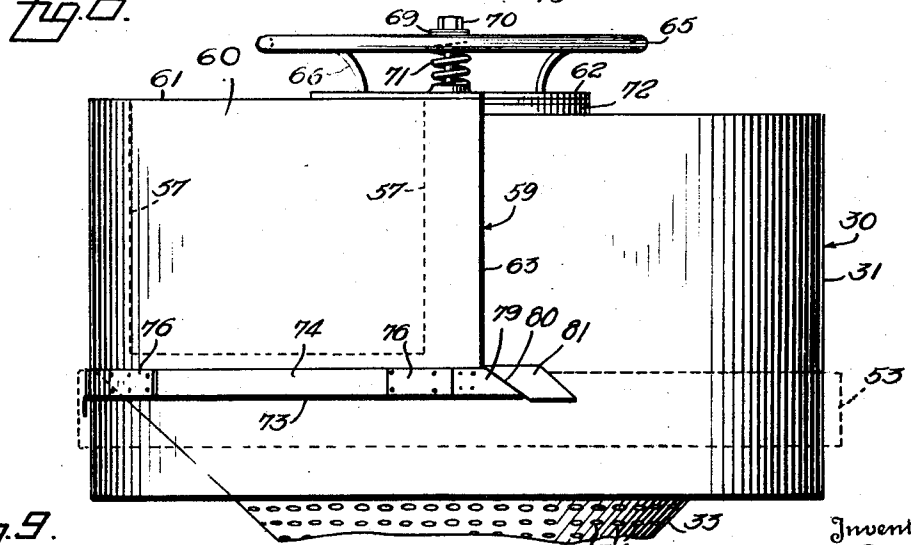
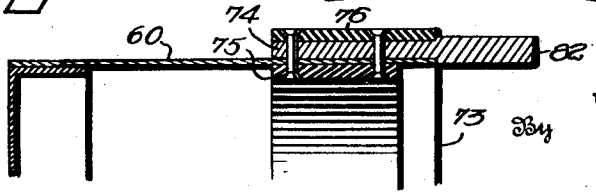


Fig. 9.



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ARTICLE CONDITIONING SHAKE-OUT TUMBLER

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Fig. 10.

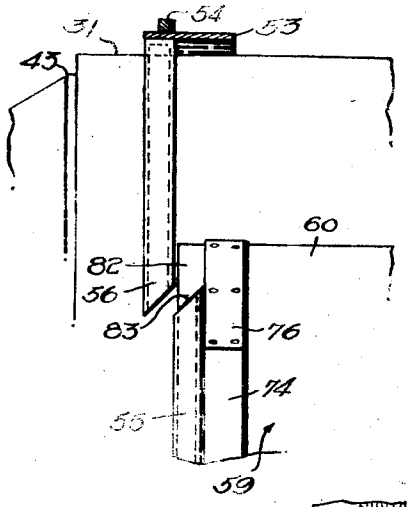
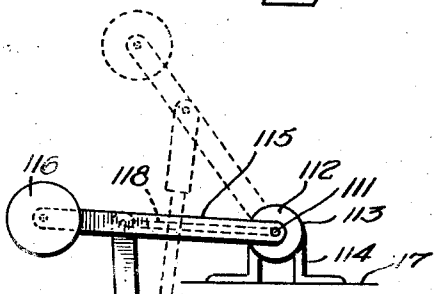
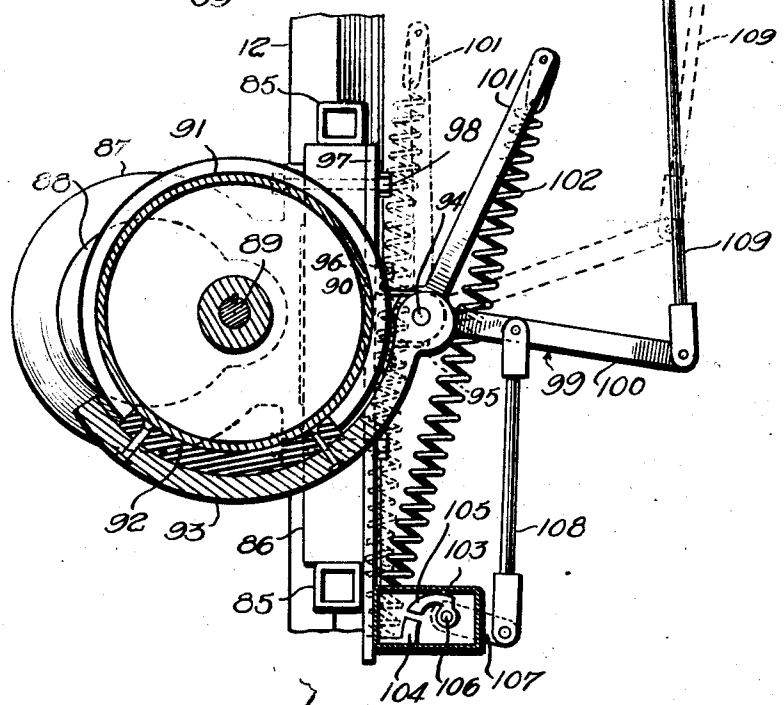


Fig. 11.





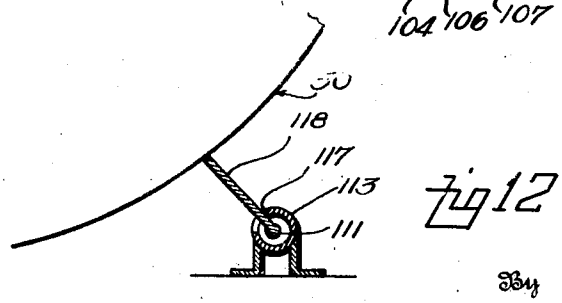


Fig. 12

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Patented Jan. 11, 1944

2,339,030

UNITED STATES PATENT OFFICE

2,339,030

ARTICLE CONDITIONING SHAKEOUT TUMBLER

Edward D. Purkett, Joplin, Mo.

Application June 30, 1941, Serial No. 400,513

22 Claims. (Cl. 34—131)

This invention relates to article conditioning shake-out tumbler for use in laundries, and is an improvement over the structure shown in my copending application Serial No. 232,873, filed October 1, 1938, now Patent No. 2,253,047, granted August 19, 1941.

In the prior construction referred to, I have disclosed a laundry shake-out tumbler wherein articles, after they had been laundered and the majority of the water extracted therefrom, were tumbled to loosen them and sufficiently remove the wrinkles from the articles to facilitate the subsequent ironing operation. In the prior construction referred to, I employed the advantageous feature of heating the articles as they were being tumbled and loosened, it being found that the subjection of the damp articles to heat assisted in removing the wrinkles and creases and also maintained the articles at a relatively high temperature so as to minimize the length of time required for the ironing operation.

In the prior construction referred to the apparatus was provided with an air circulating system in the nature of a continuous duct a part of which was formed by the shake-out tumbler, the articles being tumbled while being subjected to a moving column of air through the system. Upon the completion of the tumbling operation, the portion of the duct connected to one end of the tumbler would be swung away from operative position to permit the tumbler to be turned on a horizontal axis to a dumping position wherein said end of the tumbler would open downwardly to discharge articles as the tumbler continued to rotate.

An important object of the present invention is to provide a greatly simplified and far more compact apparatus which is capable of performing all of the functions of the prior apparatus referred to.

More specifically an important object of the invention is to provide a shake-out tumbler mechanism wherein the tumbler is mounted to rotate on a single horizontal axis to tumble the clothes or other articles therein, and wherein the tumbler is so constructed as to be able to discharge the loosened articles therefrom without the necessity for providing a second axis on which the tumbler may turn to a discharging position, as is true in the prior construction, thus greatly simplifying the apparatus.

A further object is to provide such an apparatus wherein the same results may be obtained as to the circulation of heated air without employing the outside ducts, as in the prior construction, in order to maintain the circulation of the air.

A further object is to provide a tumbler mounted to turn as a unit on a fixed horizontal axis and having a portion of the tumbler perforated and surrounded by a heating casing whereby such casing and the perforated portion of the tumbler form a heated chamber in which air is heated, the construction and arrangement of the tumbler parts being such that the lifting and falling of the articles therein induce a circulation of heated air through the tumbler.

A further object is to provide the tumbler with a novel form of door structure whereby the tumbler readily may be loaded or the tumbled articles discharged therefrom while the tumbler remains stationary and without the necessity for turning the tumbler on an axis different from the normal rotational axis of the tumbler to a discharging position, as is necessary in the prior construction.

A further object is to provide a tumbler having a door forming part of one end wall and part of the cylindrical wall of the tumbler and movable between open and closed positions with the door opening approximately in a predetermined position with respect to tumbling ribs within the tumbling cylinder, whereby the articles may be readily discharged from the tumbler without interference by the tumbling ribs.

A further object is to provide novel control mechanism for the source of power which drives the tumbler, and to provide in connection with the control mechanism a novel form of safety means whereby an operator is protected from injury in the event his hand or any other portion of his body moves into the space between the supporting table and the downwardly moving side of the tumbler, the safety means functioning under any such conditions to stop the motor and apply a brake to promptly stop rotation of the tumbler.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing:

Figure 1 is an end elevation of the apparatus, parts being broken away,

Figure 2 is a side elevation of the same, parts being broken away,

Figure 3 is a central vertical sectional view through the tumbler taken substantially on line 3—3 of Figure 1, the supporting structure and associated parts being omitted,

Figure 4 is a section taken substantially on line 4—4 of Figure 3,

Figure 5 is a section taken substantially on line 5—5 of Figure 1,

Figure 6 is an enlarged fragmentary sectional view of a portion of the top of the tumbling drum as viewed in Figure 3, and associated elements,

Figure 7 is an enlarged end elevation showing the tumbler in dotted lines, looking in the direction of Figure 1 and illustrating the door arrangement,

Figure 8 is a bottom plan view of the tumbler showing associated portions of the apparatus in dotted lines,

Figure 9 is a detail fragmentary sectional view on line 9—9 of Figure 7,

Figure 10 is a fragmentary side elevation of a portion of the tumbler and cover structure looking from the left side of the apparatus as viewed in Figure 7, parts being shown in section,

Figure 11 is a front elevation of the control mechanism shown separate from the apparatus for the purpose of illustration, parts being shown in section and parts being broken away, and,

Figure 12 is a detail sectional view on line 12—12 of Figure 2 showing the arrangement of the safety plate.

Referring to Figures 1, 2 and 5 the numeral 10 designates the base structure of the apparatus as a whole. This structure is formed of a pair of opposite corner posts 11, a rear post 12 and a forward post 13, all of which may be made of hollow cross-sectional shape as shown in Figure 5. The forward post 13 is relatively short as indicated in Figures 1 and 2 for a purpose to be described. At a point spaced from their lower ends the four posts are connected by forward transverse members 14 and rear transverse members 15, the former extending from the post 13 to the respective posts 11 while the cross members 15 extend from the rear post 12 to the respective posts 11. The structural elements described are preferably welded to each other. The forward post 13 and the cross members 14 support a platform 16 adapted to hold a basket into which clothes or other laundered articles may be discharged, as will become apparent.

The posts 11 and 12 support a top plate 17 (Figures 1 and 2) and the sides of the base structure are closed by a preferably cylindrical wall 18, this wall obviously being cut away in the space above the platform 16 and forwardly of the posts 11. The space between the latter posts 11 support a forward closure plate 19 as shown in Figures 1, 2 and 5.

The tumbling mechanism to be referred to is supported by a single relatively heavy circular post 20 the lower end of which is arranged in and supported in vertical position by the rear post 12. This post is rigidly supported so as to withstand the load of the tumbling mechanism by welding between the upper ends of the posts 11 and 12 a plurality of horizontal braces 21 arranged similar to the braces 14 and 15.

Referring to Figure 3 it will be noted that the upper end of the supporting post 20 has secured thereto, preferably by welding, a cylindrical casing 22 the rear end of which is normally closed by a relatively light cover plate 23. The casing 22 is provided with an internal flange 24 to which is bolted as at 25 an external annular flange 26 carried by a hub member 27.

A heavy stub shaft 28 is supported in suitable roller bearings 29 carried by the hub 27 and the stub shaft carries the tumbling drum indicated as a whole by the numeral 30. This drum comprises a generally cylindrical wall 31 and a forward wall 32, and these walls are provided with a loading and discharge opening to be referred to later. The tumbler further comprises a conical wall 33 perforated as at 34 and provided with an attaching flange 35 arranged within and spaced from the rear end of the cylindrical wall 31 and preferably welded thereto. The projection of the cylindrical wall 31 rearwardly of the flange 35 is for a purpose to be described.

The conical wall 33 is connected at its smaller end, preferably by welding, to a relatively heavy plate 36 and this plate is bolted or otherwise secured to a flange 37 which carries the stub shaft 28. This shaft, therefore, supports the tumbling drum for rotation during the tumbling operation, and in order to lift and drop laundered articles therein, the drum is provided with a pair of lifting ribs 38.

A heating casing indicated as a whole by the numeral 39 is arranged as shown in Figure 3. This casing comprises a relatively heavy rear wall 40 secured as at 41 to the casing 22 whereby it is obviously rigid therewith. The casing 39 further comprises a conical wall 42, spaced from the conical wall 33, and terminating in a cylindrical flange 43 (Figure 6) which projects somewhat into the rear end of the tumbler wall 31 and is of smaller diameter than such wall. The rear end of the tumbler wall 31 carries an annular channel 44 within which is arranged packing 45 contacting with the flange 43 to form a substantially fluid-tight joint to prevent the escape of heat as will become apparent.

The space between the conical walls 33 and 42, the wall 40 and the rear end of the cylindrical wall 31 forms a heating chamber 46 in which are arranged steam coils 47 arranged as shown in Figures 3 and 4 and provided with radiating fins 48. At the top and bottom of the apparatus the heating pipes 47 are connected by inlet and outlet headers 49 and 50 respectively, and these headers are provided respectively with inlet and outlet pipes 51 and 52 to supply steam to the pipes 47 and to discharge steam and water of condensation therefrom.

The drum 30 is provided with an annular band 53 forming a pulley engageable by a belt 54, driven in a manner to be described, to rotate the drum 30. The pulley 53 is connected to and annularly spaced from the drum 30 by a preferably channel shaped ring 55. The spacing of the pulley 53 from the drum is provided to protect the belt 54 from the destructive effects of the heat of the drum 30 when the apparatus is in operation. The ring 55 has a segment thereof offset as at 56 (Figure 10) and the extent and purpose of the offset portion 56 will be described later.

The drum 30 is provided in the cylindrical wall 31 thereof with an opening 57 (Figures 3, 7 and 8) and the front wall 32 of the drum is arcuately cut away as at 58, the cut-away portions 57 and 58 providing a loading and discharge opening for the drum. It will be noted that the cut-away 57 extends from the forward wall 32 of the drum approximately to the flange 35 (Figure 3) of the conical portion 33 of the drum.

A cover structure 59 is provided for the opening formed by the cut-away portions 57 and 58. The cover structure comprises an arcuate wall 60 concentric with the drum as a whole and of such length as to extend beyond the edges of the cut-away 57. The cover further comprises a front wall 61. The latter wall has an arcuate central

portion 62 concentric with the axis of the drum and from such concentric portion the edges 63 of the wall 61 are concavely curved toward the extremities of the cover as shown in Figure 7. The curvature of each edge portion 63 preferably coincides with the curvature of the cut-away 58 so as to coincide therewith when the cover is in the open position shown in Figures 1 and 3. A circular plate 64 is secured against the front 61 of the cover and is preferably welded thereto. A hand wheel 65 is secured to the plate 64 by welding the spokes 66 of the wheel to the plate. A stiffening plate 67 is welded or otherwise secured against the inner face of the wall 32 and a bolt 68 passes through the plate 67 and wall 32, through the wall 61 and plate 64 and then through a washer 69 seating against the plate 64. A nut 70 is threaded on the bolt and confines a spring 71 against the plate 64 to urge the wall 61 inwardly axially with respect to the drum 30. Suitable packing 72 extends throughout the length of the cover edges 62 and 63 and is arranged between the cover and the wall 32 to provide a leakproof joint.

Throughout the length of the inner edge 73 of the arcuate portions 60 of the cover a steel or other metal stiffening strip 74 (Figures 8 and 9) is secured against the outer face of the arcuate wall 60. At spaced points inner and outer fiber bearing strips 75 and 76 are secured to the strip 74 and to the inner surface of the wall 60, respectively. The strips 75 and 76 form bearing strips respectively engageable with the inner surface of the pulley 53 and the outer surface of the drum wall 31. Obviously the edge 73 of the arcuate wall 60 extends substantially beneath the pulley 53, as shown in Figure 6, and to the inner surface of the wall 60 is secured a packing strip 77 engageable with the tumbler wall 31 to provide a leakproof joint. This packing also contacts with a guide ring 78 secured to the wall 31.

One end of the metal stiffening strip 74 (Figure 8) is provided with a circumferential projection 79 having an inclined face 80 engageable with the similarly inclined edge of a stop block 81 secured to the tumbler wall 31. The edges of the projection 79 and block 81 are engageable when the door structure 59 is in closed position as will become apparent. Referring to Figures 9 and 10, it will be noted that one lateral edge of the stiffening strip 74 at the end of the door remote from the projection 79 is provided with a lateral projection 82 having an inclined face 83 (Figure 10) engageable with the similarly sloped adjacent end of the ring section 55. As previously stated, a portion of the ring 55 is offset as at 56 and the purpose of this is to permit the projection 82 to engage the adjacent end of the track section to limit the turning movement of the door structure 59 to closed position in the same manner that this function is performed by the projection 79 and block 81. The section 56 of the ring referred to is offset a distance approximately equal to the circumferential extent of the loading and discharging opening previously described so that the projection 82 is free to turn to the extent necessary for the door structure 59 to assume the fully opened position shown in Figure 1. It will be apparent that the handwheel 65 may be grasped by the operator and rotated between the open and closed positions.

The rear post 12 (Figures 2, 5 and 11) of the main support of the apparatus is provided with spaced horizontal supporting arms 85 preferably welded thereto and a vertical support 86 is preferably welded at its upper and lower ends to the arms 85. The support 86 carries a driving motor 87 preferably of the geared head type, suitable reduction gearing (not shown) being mounted in a casing 88 to operate a driven shaft 89 at a speed materially lower than the speed of the motor armature. The shaft 89 carries a pulley 90 around which the belt 54 passes. This belt extends upwardly through a suitable opening (not shown) in the top plate 17 and it will be apparent that the motor 87 therefore rotates the tumbler during the operation thereof.

The shaft 89 carries a brake drum 91 engageable by a lining 92 (Figure 11) carried by a brake shoe 93. This brake shoe is mounted on a shaft 94 carried by a bearing 95 and this bearing is bolted as at 96 to a plate 97 secured to the support 86 by the same bolts 98 which secure the motor 87 in position. The plate 97 forms a single support for the control mechanism comprising the brake and other elements to be described.

The shaft 94 is keyed with respect to the brake shoe 93 and also with respect to a bell crank lever indicated as a whole by the numeral 99 and comprising arms 100 and 101. A spring 102 is connected at one end to the upper end of the arm 101 and is connected at its lower end to the plate 97. When the apparatus is not in operation the spring 102 is arranged to the right of the shaft 94 and moves across the axis of this shaft to the dotted line position shown in Figure 11 when the motor is in operation and the purpose of this arrangement will be referred to later.

A switch mechanism 103 is carried by the lower end of the plate 97 and is provided with a stationary contact 104 and a movable contact 105, the latter being carried by a shaft 106 having an operating crank 107. The end of this crank is connected by a link 108 to the arm 100 as shown in Figure 11. Downward movement of the arm therefore opens the switch while upward movement of the arm closes the switch to operate the motor and at the same time release the brake as will become apparent. The free end of the arm 100 is connected by a link 109 to a crank arm 110, (Figure 2).

The crank arm 110 is carried by one end of a shaft 111 mounted in end plates 112 carried by a tubular member 113 arranged above the top 17 and welded to angular supports 114 which, in turn, are welded to the top plate 17. At the forward end of the apparatus the shaft 111 carries a crank 115 provided with a handle 116 easily accessible to the operator as shown in Figures 1 and 2. The tubular member 113 is provided with an elongated arcuate slot 117 (Figure 12) through which project a pair of plates 118 and 119 (Figures 2 and 12). These plates being arranged in alignment with each other and spaced for the passage therebetween of the belt 54. These plates normally extend angularly toward the drum 30 as shown in Figure 12 and the plate 118 is notched as at 120 to clear the pulley 53. These plates constitute a safety feature for stopping the motor 87 and applying the brake as will become apparent.

The operation of the apparatus is as follows: The apparatus is turned to a position in which the loading and discharge opening faces upwardly, and articles which have been laundered and from which the water has been largely extracted are loaded into the tumbler. The operator will then rotate the hand wheel 65 in a

counterclockwise direction as viewed in Figure 1 to move the door structure 59 to closed position, in which position the projection 79 will lock against the lug 80 (Figure 8) and the projection 82 will engage the end 83 of the ring 55. The articles which have been placed in the apparatus are damp and in a tightly wrinkled condition and the apparatus is operated to shake out the articles and to greatly soften and lessen the sharpness of the wrinkles. The apparatus is placed in operation by moving the knob 116 upwardly to the dotted line position shown in Figure 11, this operation pulling upwardly on the arm 100 to engage the switch arm 105 with the switch 104 to start the motor 87. The same operation swings the brake shoe 93 away from the brake drum 91 to release the shaft 89 for rotation. Moreover, in performing the operations referred to, the spring 102 will move across the axis of the shaft 94 sufficiently to hold the arm 101 in the operative position shown in dotted lines in Figure 11. The spring 102 and associated elements provide a snap-over mechanism the functioning of which will be further referred to later.

The operation of the motor rotates the tumbler through the medium of the belt 54 and the ribs 38 will pick up the articles in the tumbler during rotation of the drum and repeatedly drop them to the bottom of the drum. The speed of rotation of the drum is such that the articles will be dropped in the manner stated rather than being carried around with the drum in a rotary movement. This repeated picking up and dropping of the articles prepares them for subsequent ironing within about two or three minutes.

During operation of the drum the coils 47 (Figure 3) will be supplied with steam entering through the header 51 and leaving through the header 52 together with water of condensation forming in the coils. The thermo-syphonic action occurring in the heating chamber 46 causes hot air to flow into the drum through the perforations 34 toward the top of the drum, the cool air in the lower portion of the drum flowing therefrom into the heating chamber 46 as will be apparent. Moreover, the successive operations of dropping the clothes or other laundered articles after they have been lifted by the ribs 38 causes the expulsion of air through the perforations 34 toward the bottom of the drum, thus assisting in the circulation of heated air through the drum. It will be obvious, of course, that any suitable heating means may be employed other than the steam coils 47 with their radiating fins 48.

The apparatus thus provides excellent means for heating the damp articles within the tumbler together with the continuous circulation of the heated air without the use of circulating fans or outside circulating ducts as have been previously employed for cyclically circulating the air.

The water content of the articles is relatively highly heated to provide two important results. In the first place, the heating of the water content greatly softens and lessens the sharpness in the wrinkles in the laundered articles to render them more easily ironed, and in the second place, the clothes are delivered to the ironers at such a temperature as to make the completion of the ironing operation and the drying out of the moisture in the articles require a minimum length of time. From two to three minutes operation of the apparatus, therefore, provides greatly fluffed and materially less wrinkled articles and thus the articles are in the correct condition paticularly for machine ironing.

After the articles have been properly prepared for ironing the machine is stopped with the discharge opening near the bottom of the apparatus, the rotation of the tumbler being stopped by moving the knob 116 downwardly to reverse the operations previously described whereby the switch (Figure 11) may be opened and the brake applied by the rocking of the shaft 94 to quickly stop the mechanism in the proper position. The hand wheel 65 is then rotated in a clockwise direction as viewed in Figures 1 and 7, closed position in Figure 7, to the open position in Figure 1, whereupon the clothes will readily drop by gravity into the basket on the platform 16.

The structure of the door 59 and the discharge opening of the tumbler are highly important. By extending the discharge opening through the front wall 32 of the tumbler casing the discharging of the clothes as well as the loading of the tumbler are greatly facilitated. By forming the rear end of the tumbler conical as shown in Figure 3 any articles which are in such conical portion of the tumbler fall by gravity toward and thence through the opening 57. The conical structure of the drum permits such portion of the drum to project into the heating chamber to provide for effecting heating of the articles in the apparatus. The arrangement of the ribs 38 is such that when the discharge opening is in a position to discharge articles, the ribs 38 slope downwardly and thus prevent the hanging thereon of any of the articles.

The elimination of so many of the structural features of my prior apparatus referred to above greatly lowers the cost of manufacture, maintenance and operation of the apparatus. In fact, only approximately one-tenth the power is required for operating the present apparatus that was required with my prior apparatus. It is unnecessary to mount the tumbler for turning movement on an axis perpendicular to the spindle 33 to unload the mechanism; it is unecessary to provide the power previously employed for circulating air through the system; it is unnecessary to operate any part of the drum during the tumbling operation against the friction occurring incident to the sealing packing necessary in the prior construction, etc. In operation the present apparatus, with all of its advantages as to simplicity, economy, etc., has been found to operate with approximately the same efficiency as my prior construction.

The apparatus as illustrated may be considered a "left hand" apparatus and the tumbler rotates in a clockwise direction as viewed in Figure 1. Accordingly the right hand side of the tumbler moves downwardly toward the top 17 with the space between the tumbler and the top 17 decreasing as the top 17 is approached. The plates 118 and 119 are employed as a safety feature to provide means for preventing mashing the hand or any other part of the person of the operator between the tumbler and the top 17. If an operator accidentally sticks some portion of his person beneath the drum at the right hand side of the apparatus, for example, the hand of the operator, it will be obvious that the operator's hand will contact either the plate 118 or 119 to swing the shaft 111 (Figure 11) in the same manner as when the knob 116 is operated to stop the mechanism.

This operation is accomplished by rocking the shaft 94 in a clockwise direction to move the

spring 102 across the shaft 94 whereupon the spring 102 will snap the arm 101 to its off position shown in solid lines in Figure 11, the switch being opened and the brake being applied. The spring 102 is further past center in the off position than in the operative position to utilize a greater force for applying the brake than need be employed for holding the brake in the off position and the switch in the closed position. Accordingly it requires very little force, when the spring 102 is in the off position, to swing it across the axis of the shaft 94 to apply the brake and stop the motor 87. Thus the apparatus is designed to prevent any injury to an operator.

The apparatus is also designed to facilitate the making of right and left hand machines so that two of the machines may be arranged face to face with their platforms 16 fairly close to each other to facilitate the feeding of a single ironer from the two tumbling mechanisms. As previously stated the present machine may be considered to be a left hand apparatus, but it will be apparent that the machine can be assembled as a right hand machine simply by assembling the motor 87 on the opposite side of the support 36 and by assembling the control and safety features at the reverse side of the apparatus. For such a machine, the rib 38 (Figure 1) diametrically opposite the discharge opening would be retained in the position shown while the other rib 38 would be placed adjacent the opposite end of the discharge opening.

It will be noted that the cylinder 34 extends substantially beyond the plane of connection of the conical wall 32 therewith, thus permitting a portion of the tumbler cylinder to form one wall of the heating chamber. A second wall of the heating chamber is formed by the conical wall of the drum, thus making it necessary to provide only the plate 40 (Figure 3) and inclined wall 42 to complete the heating chamber. This arrangement of parts also contributes to the simplicity and efficient operation of the apparatus.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. An article conditioning apparatus for laundries comprising a tumbler formed of a cylindrical body having a perforated frustro-conical wall defining one end of the tumbler and having the peripheral portion of its larger end arranged within and spaced from one end of said cylindrical body whereby the latter end projects longitudinally beyond said peripheral portion of said frustro-conical wall, a casing cooperating with the projecting end of said cylindrical body and with said perforated wall to form a heating chamber, and heating means for said chamber.

2. An article conditioning apparatus for laundries comprising a tumbler formed of a cylindrical body having a perforated frustro-conical wall defining one end of the tumbler and having the peripheral portion of its larger end arranged within and spaced from one end of said cylindrical body whereby the latter end projects longitudinally beyond said peripheral portion of said frustro-conical wall, a casing cooperating with the projecting end of said cylindrical body and with said perforated wall to form a heating chamber, heating means for said chamber, and means within said tumbler carried by the cylindrical body thereof for alternately lifting and dropping articles in the tumbler.

3. An article conditioning apparatus for laundries comprising a tumbler mounted for rotation on a horizontal axis, said tumbler having a cylindrical body and end walls one of which is perforated, a casing spaced from said perforated wall and cooperating therewith to form a heating chamber, heating means for said chamber, said cylindrical body and the other end wall being cut away to form a single loading and discharge opening, and a cover structure movable between two positions to close said opening and to open it for the discharge of articles therethrough by gravity when the tumbler is so positioned that the discharge opening is at or adjacent its lowermost position.

4. An article conditioning apparatus for laundries comprising a tumbler mounted for rotation on a horizontal axis, said tumbler having a cylindrical body and end walls one of which is perforated, a casing spaced from said perforated wall and cooperating therewith to form a heating chamber, heating means for said chamber, said cylindrical body and the other end wall being cut away to form a single loading and discharge opening, and a cover structure rotatably connected to the last named end wall coaxially with respect to said cylindrical body, said cover structure having integral portions for closing said opening and for opening it for the gravitational discharge of articles from the tumbler when the tumbler is so positioned that the opening is at or adjacent its lowermost position.

5. An article conditioning apparatus for laundries comprising a tumbler mounted for rotation on a horizontal axis, said tumbler having a cylindrical body and end walls one of which is perforated, a casing spaced from said perforated wall and cooperating therewith to form a heating chamber, heating means for said chamber, said cylindrical body and the other end wall being cut away to form a single loading and discharge opening, and a cover structure movable between two positions to close said opening and to open it for the discharge of articles therethrough by gravity when the tumbler is so positioned that the discharge opening is at or adjacent its lowermost position, said perforated end wall being generally conical in shape with its smaller end projecting axially from the end of said cylindrical body and the opening in said cylindrical body extending to a point adjacent said perforated wall whereby the latter tends to feed articles toward said opening when said opening is at or adjacent its lowermost position.

6. An article conditioning apparatus for laundries comprising a tumbler mounted for rotation on a horizontal axis, said tumbler having a cylindrical body and end walls one of which is perforated, a casing spaced from said perforated wall and cooperating therewith to form a heating chamber, heating means for said chamber, said cylindrical body and the other end wall being cut away to form a single loading and discharge opening, and a cover structure rotatably connected to the last named end wall coaxially with respect to said cylindrical body, said cover structure having integral portions for closing said opening and for opening it for the gravitational discharge of articles from the tumbler when the tumbler is so positioned that the opening is at or adjacent its lowermost position, said

perforated end wall being generally conical in shape with its smaller end projecting axially from the end of said cylindrical body and the opening in said cylindrical body extending to a point adjacent said perforated wall whereby the latter tends to feed articles toward said opening when said opening is at or adjacent its lowermost position.

7. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical body, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, and heating means arranged between said stationary casing and said conical end wall.

8. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical body, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, and means within and carried by said cylindrical body for alternately lifting and dropping articles in the tumbler.

9. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical wall, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, and closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall.

10. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical wall, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall, and means for connecting said closure means to the last named end wall coaxially with respect to the tumbler for rotational movement between open and closed positions.

11. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical wall, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall, and means for connecting said closure means to the last named end wall coaxially with respect to the tumbler for rotational movement between open and closed positions, the opening in said cylindrical body extending substantially to said conical wall whereby the latter tends to feed articles toward said opening by gravity when the tumbler is so positioned that said opening is at or adjacent its lowermost position.

12. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical wall, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, and closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall, and means within and carried by said cylindrical body for alternately lifting and dropping articles in the tumbler.

13. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof

whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical body, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall, and means for connecting said closure means to the last named end wall coaxially with respect to the tumbler for rotational movement between open and closed positions, and means within and carried by said cylindrical body for alternately lifting and dropping articles in the tumbler.

14. An article conditioning apparatus for laundries comprising a tumbler having a cylindrical body arranged with its axis horizontal, a conical perforated end wall for said cylindrical body having a flanged end connected to said cylindrical body at a point spaced from one end thereof whereby such end projects substantially beyond said flanged end, a stationary casing spaced from said conical end wall and provided with a flanged portion adjacent and concentric with the adjacent end of said cylindrical body, packing means between the flanged portion of said stationary casing and the projecting end of said cylindrical body, heating means arranged between said stationary casing and said conical end wall, said cylindrical body having an end wall at the other end thereof, said cylindrical body and said last named end wall being cut away to form a loading and discharge opening, closure means for said opening having portions forming substantially continuations of said cylindrical body and said last named end wall, and means for connecting said closure means to the last named end wall coaxially with respect to the tumbler for rotational movement between open and closed positions, the opening in said cylindrical body extending substantially to said conical wall whereby the latter tends to feed articles toward said opening by gravity when the tumbler is so positioned that said opening is at or adjacent its lowermost position, and means within and carried by said cylindrical body for alternately lifting and dropping articles in the tumbler.

15. An article conditioning apparatus for laundries comprising a base, a vertically extending stationary post carried by said base, a stationary casing mounted on the upper end of said post, bearings in said casing, a spindle supported by said bearings for rotation on a horizontal axis, a tumbler carried by said spindle, and a heater casing carried by said first named casing and spaced from one wall of said tumbler to form a heating chamber, heating means for said chamber, said wall of said tumbler being an end wall and being perforated.

16. An article conditioning apparatus for laundries comprising a base, a vertically extending stationary post carried by said base, a stationary casing mounted on the upper end of said post, bearings in said casing, a spindle supported by said bearings for rotation on a horizontal axis, a tumbler carried by said spindle, a heater casing carried by said first named casing and spaced from one wall of said tumbler to form a heating chamber, heating means for said chamber, said wall of said tumbler being an end wall and being perforated, and means within said tumbler for alternately lifting and dropping articles in the tumbler to effect a circulation of air between the interior of said tumbler and said heating chamber.

17. A conditioning apparatus for moist laundered articles comprising a pair of spaced end walls, one of which is perforated and the other of which is normally imperforate, said end walls having a common horizontal axis, a surrounding wall forming with said end walls an article-receiving and conditioning tumbler, an imperforate wall structure surrounding said axis and spaced along said axis from and cooperating with said perforated wall to form a heating chamber, heating means in said chamber between said perforated wall and said imperforate wall structure, and means for supporting said tumbler for rotation on said horizontal axis, said wall structure, said surrounding wall and said normally imperforate end wall forming a substantially leak-proof casing to retain therein moisture evaporated from the articles.

18. A conditioning apparatus for moist laundered articles comprising a pair of spaced end walls, one of which is perforated and the other of which is normally imperforate, said end walls having a common horizontal axis, a surrounding wall forming with said end walls an article-receiving and conditioning tumbler, an imperforate wall structure surrounding said axis and spaced along said axis from and cooperating with said perforated wall to form a heating chamber, heating means in said chamber between said perforated wall and said imperforate wall structure, means for supporting said tumbler for rotation on said horizontal axis, said wall structure, said surrounding wall and said normally imperforate end wall forming a substantially leak-proof casing to retain therein moisture evaporated from the articles, and means for alternately lifting and dropping articles in the tumbler to effect a circulation of air between the interior of said tumbler and said heating chamber.

19. An article conditioning apparatus for laundries comprising a base, a vertically extending stationary post carried by said base, a stationary casing mounted on the upper end of said post, bearings in said casing, a spindle supported by said bearings for rotation on a horizontal axis, a tumbler carried by said spindle, a heater casing carried by said first named casing and spaced from one wall of said tumbler to form a heating chamber, heating means for said chamber, said wall of said tumbler being a perforated conical end wall with the smaller end projecting away from the body of the tumbler, and means within the body of the tumbler for alternately lifting and dropping articles in the tumbler.

20. An article conditioning apparatus for laundries comprising a base structure, a tumbler mounted above said base structure for rotation on a horizontal axis, means comprising a motor for rotating said tumbler in one direction whereby one side of said tumbler moves downwardly and inwardly toward the top of said base structure, there being a relatively angular space between said side of said tumbler and said base structure, and means in said space projecting from said base structure toward said side of said tumbler and movable downwardly to stop said motor.

21. An article conditioning apparatus for laundries comprising a base structure, a tumbler mounted above said base structure for rotation on a horizontal axis, means comprising a motor for rotating said tumbler in one direction whereby one side of said tumbler moves downwardly and inwardly toward the top of said base structure, there being a relatively angular space between said side of said tumbler and said base structure, a rock shaft, means operable by said rock shaft for starting and stopping said motor, a handle carried by said rock shaft, and means in said space carried by said rock shaft substantially throughout the length of said tumbler and extending toward said side thereof and movable downwardly to rock said shaft and stop said motor.

22. An article conditioning apparatus for laundries comprising a base structure, a tumbler mounted above said base structure for rotation on a horizontal axis, means comprising a motor for rotating said tumbler, there being a relatively angular space between said base structure and the downwardly moving side of said tumbler when the latter is rotated in one direction, a brake for said means, and common operating means for stopping said motor and applying said brake or for starting said motor and releasing said brake, said last named means comprising a plate in said space projecting from said base structure toward the side of said tumbler which moves downwardly toward said base structure upon rotation of the tumbler, said plate being movable downwardly to stop said motor and apply said brake.

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