Jan. 10, 1928.

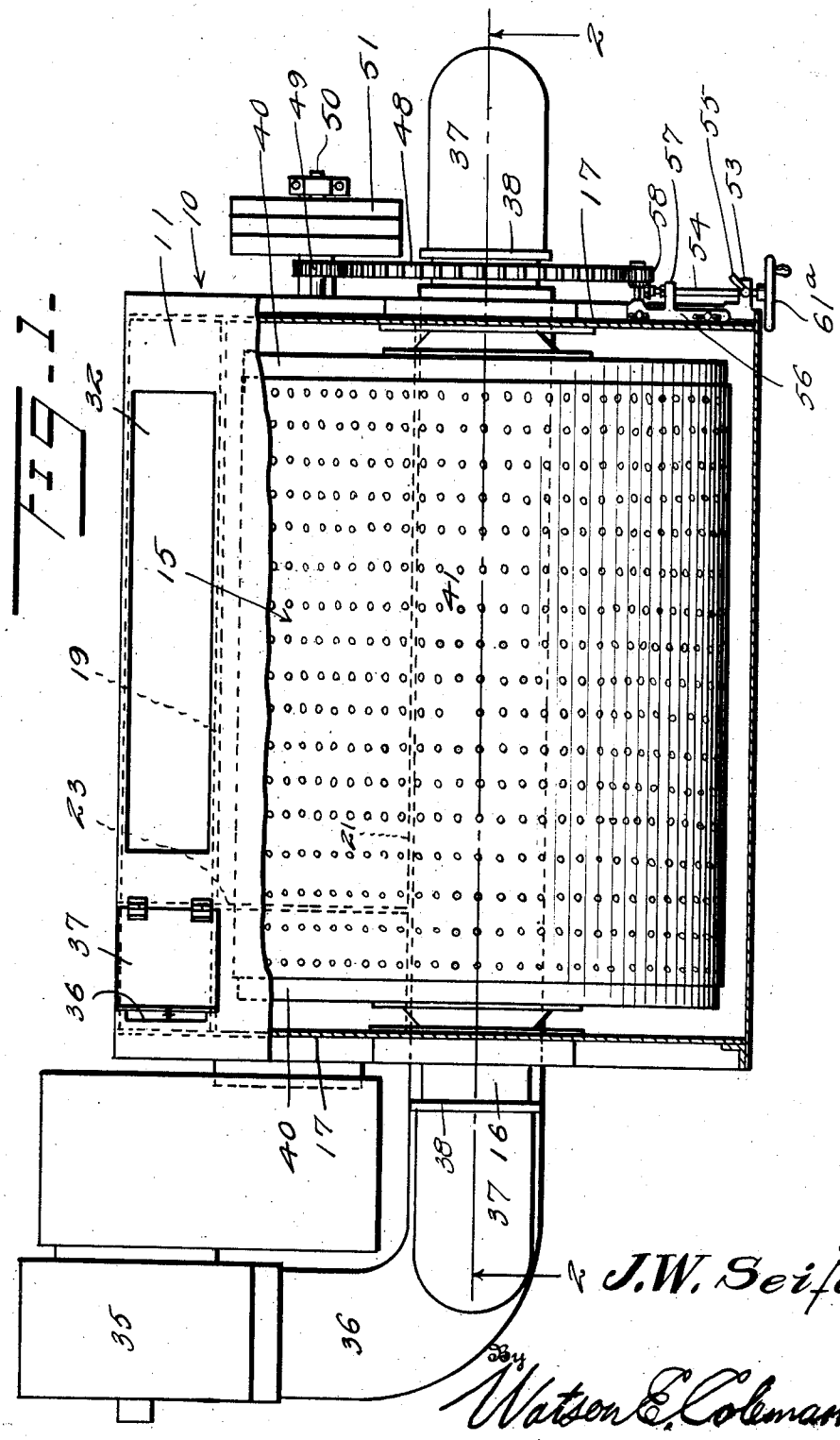
1,655,514

J. W. SEIFERT

DRYING TUMBLER

Filed Aug. 30, 1927

4 Sheets-Sheet 1



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By Watson E. Coleman Attorney

Jan. 10, 1928.

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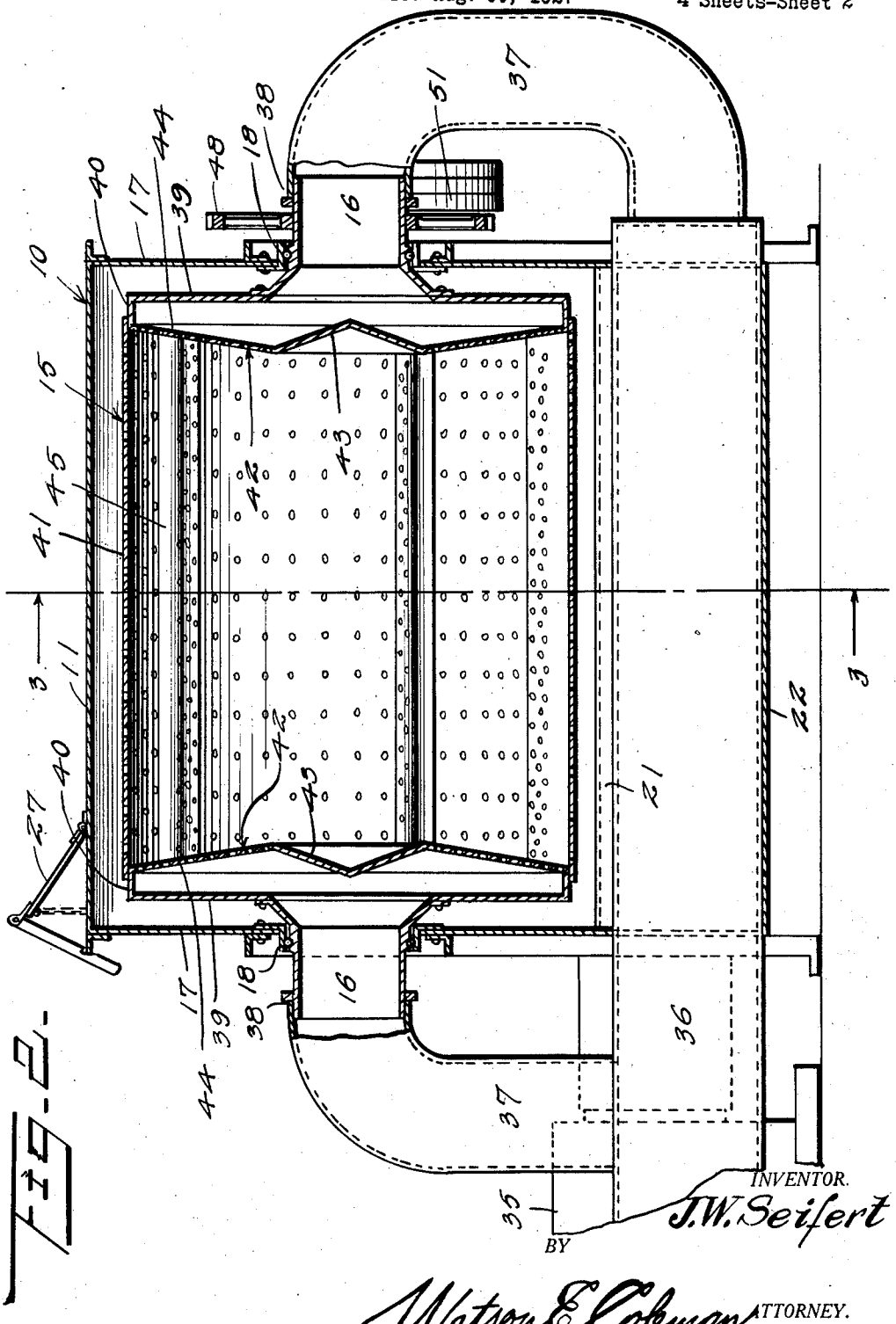


Fig. 2.

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FIG. 3.

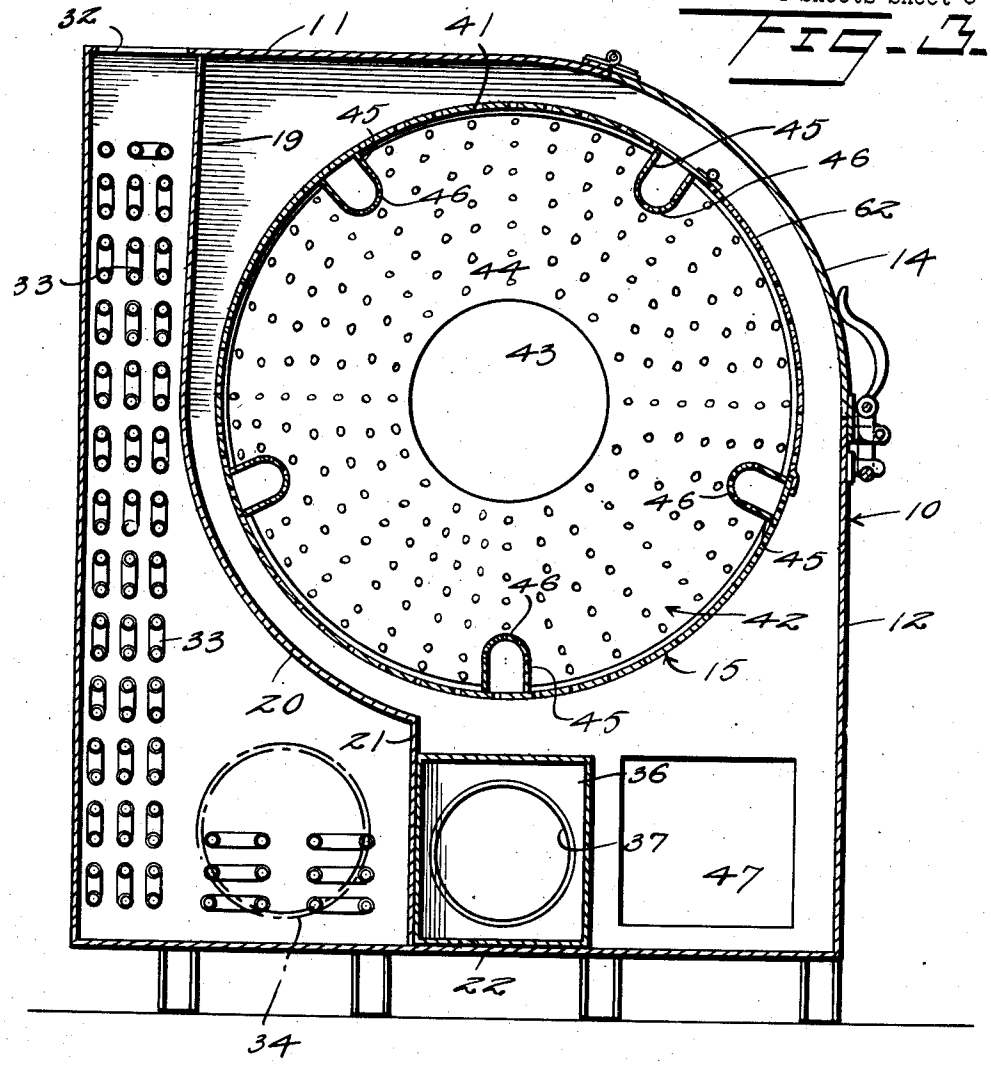
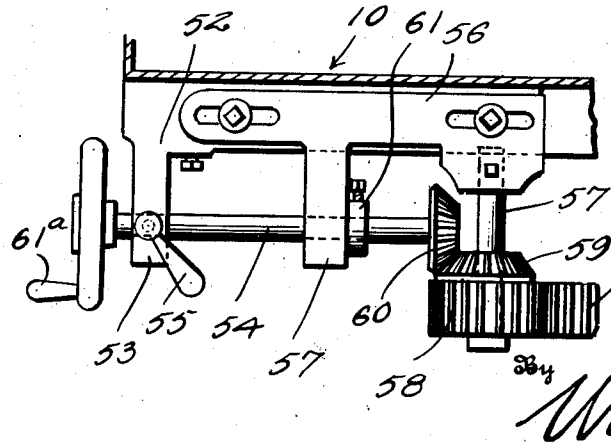


FIG. 6.



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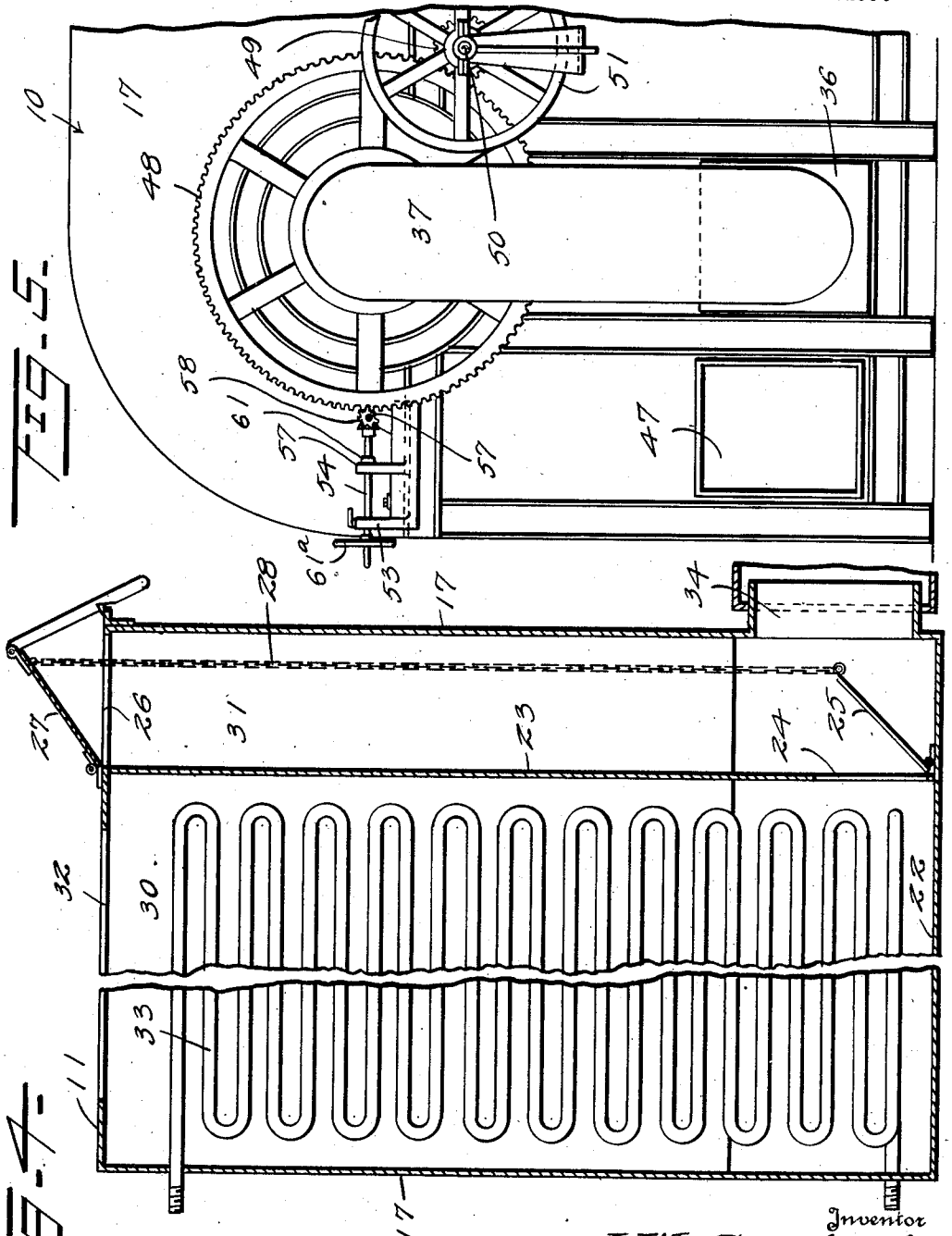


Fig. 5.

Fig. 4.

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Patented Jan. 10, 1928. 1,655,514

UNITED STATES PATENT OFFICE.

JOHN W. SEIFERT, OF HOUSTON, TEXAS, ASSIGNOR TO NATIONAL LAUNDRY MACHINE CO. INC., OF HOUSTON, TEXAS, A CORPORATION OF TEXAS.

DRYING TUMBLER.

Application filed August 30, 1927. Serial No. 216,437.

This invention relates to drying tumblers and more particularly to a device of this character for use in laundries and drying and dry cleaning establishments.

An important object of the invention is the provision of a device of this character, wherein the blast of air employed in practically all of such articles before drying is brought into intimate contact with the contents of the tumbler, so that it fluffs the material of the articles and brings out the nap thereof.

A further object of the invention is to provide novel and improved drying construction in which the tumbler is provided with agitators lifting and dropping the clothes, so constructed that during this lifting and dropping operation, they are subjecting the same to a blast of air.

A further object of the invention is to provide a drying tumbler construction of such character that after the usual drying by steam heated air, a blast of cold air may be introduced to the casing to complete the drying operation, cool the clothes and remove therefrom the odor usually imparted thereto by the heating operation.

A still further object of the invention is to provide a structure of this character which may be compactly arranged, which will be durable and efficient in service and a general improvement in the art.

A further object of the invention is the provision of a novel and improved structure for controlling the braking of the drying drum and the position of the same, so that the door of the drying drum is accessible through the casing door.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:

Figure 1 is a view partially in plan and partially in section of a closed drying tumbler constructed in accordance with my invention;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section through the air heating and control chambers;

Figure 5 is a fragmentary end elevation thereof;

Figure 6 is a detail view showing the combined brake and drum adjusting control.

Referring now more particularly to the drawings, the numeral 10 generally designates an outer casing, the junction between the upper wall 11 and the side wall 12 of which is rounded, and provided in this rounded portion with a hinged door 14. This rounded position parallels the periphery of a tumbler drum, generally designated at 15, which is arranged within the casing and supported by hollow trunnions 16 extending through and having bearing in the end walls 17 of the casing, as indicated at 18. The casing has in spaced relation to the other of its side walls a vertically extending partition 19, the lower end of which curves inwardly beneath the drum, as indicated at 20, and then drops vertically at 21 for engagement with the bottom wall 22 of the casing. Between the partition 19 and the rear wall, a second transversely extending partition 23 is disposed. This partition at its lower end has an opening 24 communicating with the chamber formed between the partition 19 and the rear wall of the casing, this opening being closable by a hinged door 25, which moves upwardly to close the opening. The top of the casing between the partition 23 and the adjacent end wall is provided with an opening 26 closed by a door 27 moving downwardly to the closed position and connected with the door 27 by a flexible element 28 in such manner that when the door 27 is fully opened, the door 25 is fully closed. The door 27 may be held in adjusted positions by an adjustable catch.

It will be obvious from the foregoing that between the partitions 19 and rear wall, two chambers 30 and 31 are formed. The chamber 30 has in its upper end a cold air inlet 32 and has arranged therein steam heating coils 33. The chamber 31 has at its lower end an outlet 34 connected with the inlet of a fan 35. It will be obvious that by an adjustment of the door 27 with the corresponding adjustment of the door 25, that the proportion of air which is drawn from the chambers 30 and 31 may be varied and accordingly the temperature of the air delivered to the fan controlled. If desired, only heated or cold air may be delivered to the fan.

The outlet of the fan 35 is connected

with a conduit 36, which extends through the end walls 17 of the casing 10 below the level of the drum 15 and at opposite ends of the casing has vertical extensions 37 having swiveled communication at 38 with the ends of the hollow trunnions 16. Each trunnion has secured thereto a drum end 39 which is imperforate and has about its periphery a solid flange 40, to which the perforated wall 41 of the drum is secured. To this flange is likewise secured a false drum end 42 having a solid center 43 and a perforated rim portion 44. The false drum end as a whole is preferably concave, as illustrated, with its concave face disposed toward the hollow trunnion, although other constructions may be employed, if desired. The solid portion 43 is preferably conical with its apex directed toward the hollow trunnion, so that air entering through the hollow trunnion is directed toward the periphery of the drum and may pass through the openings of the hollow rim 44. The drum ends 39 are connected by bars 45, the outer walls of which engage and support the perforated drum wall 41 and are free from perforations. These bars project well into the interior of the drum and have their inner walls perforated, as indicated at 46. It will be obvious that air entering through the hollow trunnions will pass not only through the openings of the rim 41, but will likewise enter the hollow bars and will pass through the openings 46 thereof for engagement with the contents of the drum. As these bars project into the drum, they will serve to engage against the contents and lift the same, so that these contents are agitated and all parts thereof exposed to the action of the air blast. As the air enters from the opposite ends of the drum, all of this air must actually engage against the contents thereof before it can escape through the walls of the perforated cover 41. Air escaping through the perforated cover 41 passes out of the casing through an outlet 47.

Secured to one of the hollow trunnions at the exterior of the casing 10 is a drive gear 48 driven from a pinion 49 mounted on a shaft 50 which is rotated in any suitable manner. In the present instance, this shaft is disclosed as equipped with a pulley 51 and adapted to be belt-driven. The end wall 17 of the casing at the same end thereof has secured thereto a casting 52 providing a split bearing 53 for a shaft 54. This bearing may be clamped upon the shaft 54 through a lever 55. Longitudinally slidable upon the casting 52 is a second casting 56 which likewise provides a bearing 57 for the shaft 54. In the casting 56 is mounted a trunnion 57 upon which is rotatably mounted a combined spur and bevel gear, the spur element 58 of which aligns with and is adapted to mesh with the gear 48 and the bevel gear element 59 of which meshes with the bevel gear 60 secured to the inner end of the shaft 54. The shaft 54 has at the same side of the bearing 57 as the bevel gear 60 a stop collar 61, preventing longitudinal movement of the shaft in the bearing, which would permit disengagement of the gears 59 and 60. The outer end of the shaft 54 is provided with a hand wheel 61. The structure just described provides a means for braking and adjusting the drum 15. The braking is accomplished by sliding the casting 56 inwardly until the gear 58 meshes with the gear 48 and then operating the lever 55 to retard rotation of the shaft 54. After the drum 15 has stopped its rotation, the main door 14 is opened and the lever 55 operated to release the shaft 54. The hand wheel 61 is then operated to bring the door 62 of the drum 15 into alignment with the door 14 of the casing. It will, therefore, be seen that by the structure recited, the brake and drum adjusting elements are combined in a single structure.

From the foregoing, it will be obvious that I have devised a drying tumbler in which the drying operation is readily controlled and by means of which this drying operation is materially shortened and rendered more effective. It will furthermore be obvious that the manipulation of the dryer is greatly facilitated by the structure employed. Since this structure is capable of a certain range of change and modification without materially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:

1. In a drying tumbler, a casing, hollow trunnions rotatably mounted in opposed walls of the casing, solid drum ends supported from said trunnions, false drum ends supported from said solid drum ends and having solid portions opposing the hollow trunnions and perforated portions outwardly of said solid portions, members connecting said drum ends and supporting a perforated drum wall and means for introducing a blast of air through said hollow trunnions.

2. In a drying tumbler, a casing, hollow trunnions rotatably mounted in opposed walls of the casing, solid drum ends supported from said trunnions, false drum ends supported from said solid drum ends and having solid portions opposing the hollow trunnions and perforated portions outwardly of said solid portions, members connecting said drum ends and supporting a perforated drum wall, means for introducing a blast of air through said hollow trunnions and means for regulating the temperature of said blast.

3. In a drying tumbler, a rotatable drum,

a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a gear secured to said trunnion, means for rotating the gear to thereby rotate the drum, a casting shiftable upon the casing toward and away from the drum axis, a shaft supported by the casting in one position thereof having driving connection with said gear, means for braking rotation of said shaft and means for manually rotating said shaft.

4. In a drying tumbler, a casing, hollow trunnions rotatably mounted in opposed walls of the casing, solid drum end supported from said trunnions, false drum ends supported from said solid drum ends and having solid portions opposing the hollow trunnions and perforated portions outwardly of said solid portions, bars connecting said drum ends and supporting a perforated peripheral drum wall, said bars being hollow and having openings formed therein and means for introducing a blast of air through said hollow trunnions.

5. In a drying tumbler, a casing, hollow trunnions rotatably mounted in opposed walls of the casing, solid drum ends supported from said trunnions, false drum ends supported from said solid drum ends and having solid portions opposing the hollow trunnions and perforated portions outwardly of said solid portions, bars connecting said drum ends and supporting a perforated peripheral drum wall, said bars being hollow and having openings formed therein, means for introducing a blast of air through said hollow trunnions, and means for controlling the temperature of the blast of air so introduced.

6. In a drying tumbler, a rotatable drum, a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a casting shiftable upon the casing wall toward and away from the axis of the drum, a shaft supported by the casting and in one position thereof having driving engagement with said trunnion, means for braking rotation of said shaft and means for manually rotating said shaft.

7. In a drying tumbler, a rotatable drum, a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a casting shiftable upon the casing wall toward and away from the axis of the drum, a shaft supported by the casting and in one position thereof having driving engagement with said trunnion, means for braking rotation of said shaft or for locking said shaft against rotation and means for manually rotating said shaft.

8. In a drying tumbler, a rotatable drum, a casing therefor, means for causing a circulation of air through the drum including a fan having its inlet in communication with the drum and means controlling the temperature of air delivered by the fan to the drum including a pair of chambers, heating elements in one of said chambers, an inlet for each chamber, an opening connecting the chambers, an outlet for the other of the chambers communicating with the fan and doors for controlling the inlet of the last named chamber and the opening connecting the chambers.

9. In a drying tumbler, a rotatable drum, a casing therefor, means for causing a circulation of air through the drum including a fan having its inlet in communication with the drum and means controlling the temperature of air delivered by the fan to the drum including a pair of chambers, heating elements in one of said chambers, an inlet for each chamber, an opening connecting the chambers, an outlet for the other of the chambers communicating with the fan, doors for controlling the inlet of the last named chamber and the opening connecting the chambers, said doors moving oppositely to closed position and a connection between the doors whereby they move in unison.

10. In a drying tumbler, a rotatable drum, a casing therefor, means for causing a circulation of air through the drum including a fan having its inlet in communication with the drum and means controlling the temperature of air delivered by the fan to the drum including a pair of chambers, heating elements in one of said chambers, an inlet for each chamber, an opening connecting the chambers, an outlet for the other of the chambers communicating with the fan, doors for controlling the inlet of the last named chamber and the opening connecting the chambers, said doors moving oppositely to closed position, a connection between the doors whereby they move in unison, and means for maintaining one of the doors in adjusted positions.

11. In a drying tumbler, a rotatable drum, a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a gear upon said trunnions and secured thereto, a casting shiftable upon the casing wall toward and away from the axis of the drum, a shaft supported by and held against longitudinal movement with relation to the casting, means carried by the casting and operatively connecting the shaft and gear in one position of the casting, means for braking rotation of the shaft and means for manually rotating said shaft.

12. In a drying tumbler, a rotatable drum, a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a gear upon said trunnions and secured thereto, a casting shiftable upon the casing

wall toward and away from the axis of the drum, a shaft supported by and held against longitudinal movement with relation to the casting, means carried by the casting and operatively connecting the shaft and gear in one position of the casting, means for braking rotation of the shaft and means for manually rotating said shaft, said means being operable to lock the shaft and casting against movements toward and away from the axis of the drum.

13. In a drying tumbler, a rotatable drum, a casing within which the drum is mounted, said drum having trunnions at least one of which extends through the wall of the casing, a gear upon said trunnions and secured thereto, a casting shiftable upon the casing wall toward and away from the axis of the drum, a shaft supported by and held against longitudinal movement with relation to the casting, means carried by the casting and operatively connecting the shaft and gear in one position of the casting, a split bearing stationary with relation to the casing in which said shaft is slidable and rotatable and a lever operable to clamp the sections of the bearing upon the shaft.

In testimony whereof I hereunto affix my signature.

JOHN W. SEIFERT.