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APPARATUS FOR DRYING TIN CANS

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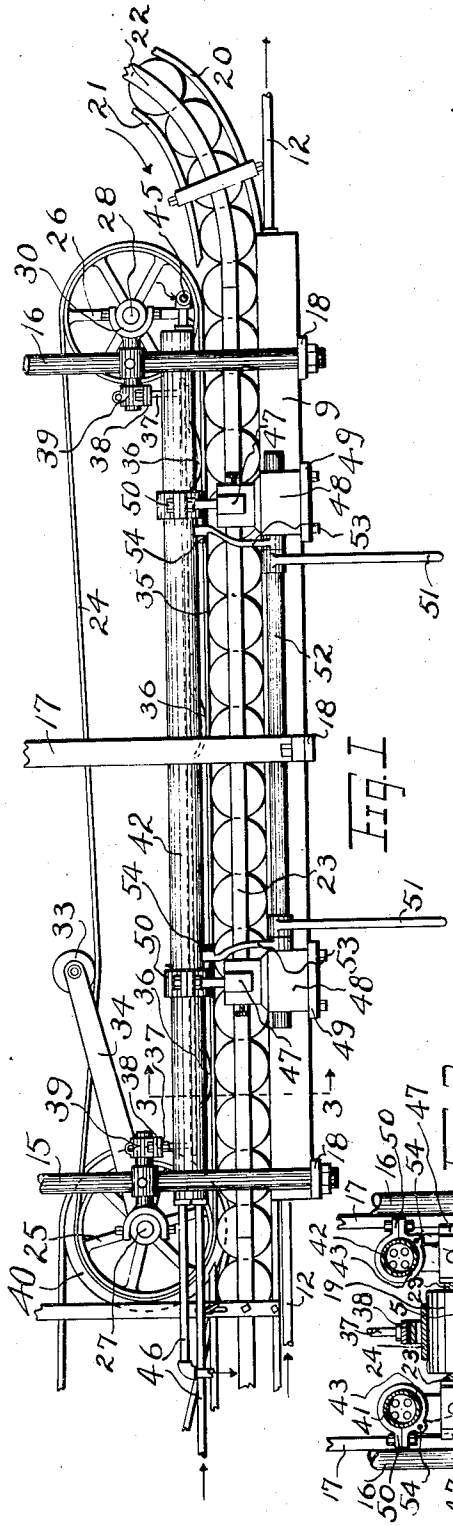


Fig. 1



Fig. 3

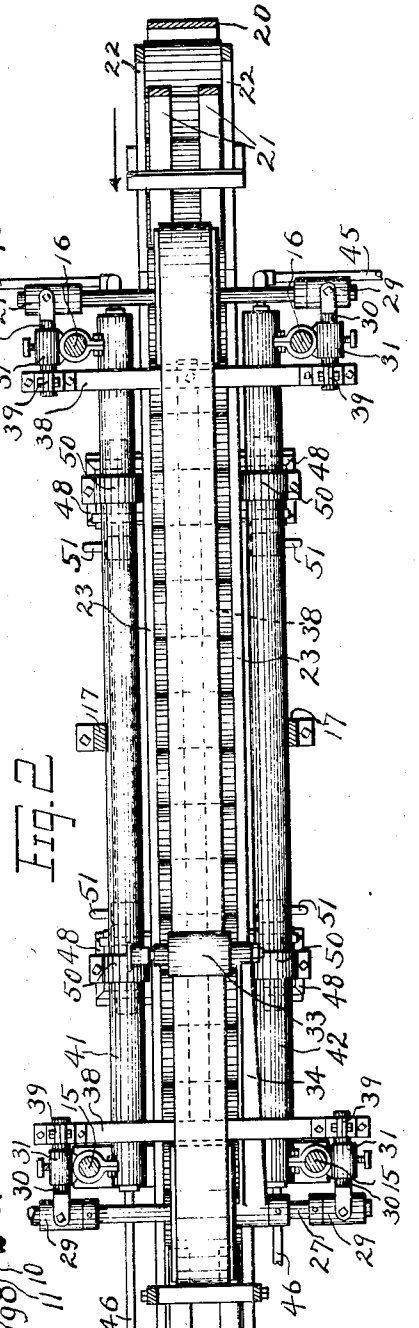


Fig. 2

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR DRYING TIN CANS.

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*To all whom it may concern:*

Be it known that I, JAMES J. MURPHY, a citizen of the United States, residing in Dixon, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Apparatus for Drying Tin Cans, of which the following is a specification.

The invention relates to an apparatus for drying cans.

It is common practice at the present time to test by means of a water bath the tin cans to be used for containing preserved foods, such as evaporated and condensed milk and other articles of food. If a can develops a leak while in the water bath, it is removed from the continuous line of cans passing through the bath. The cans which give no indication of leaking may be used immediately or may be conveyed to storage for future use. In either case, it is desirable to remove the water adhering to the cans after they emerge from the bath.

The object of the present invention is to produce an improved apparatus for drying tin cans as they come from the testing bath in a continuous stream. The improved apparatus is of such construction and arrangement that it may be interposed at any convenient point in the line of cans passing from the testing bath to the other points where the cans are subsequently operated upon. One feature of the invention is the arrangement by which the apparatus may be suspended clear of the floor, thus making more floor space available for other uses. Another important feature of the invention is the simplicity of the apparatus, which is so constructed as to operate with a minimum of attention from the operative. The invention itself is more fully described in the following specification and is particularly pointed out in the appended claims.

The preferred form of the invention is illustrated in the accompanying drawings in which Fig. 1 is a side elevation of the improved can drying apparatus; Fig. 2 is a plan of the parts shown in Fig. 1, and Fig. 3 is a section taken along the line 3—3 of Fig. 1.

The improved can drying apparatus, as illustrated in the drawings, comprises a wiper 5 composed of felt or other absorbent material. The wiper 5 is flat and extends throughout the length of the apparatus, and is supported on the top of an elongated drying chamber 6 composed of two box-like structures 7 and 8 resting on the bottom of a channel iron 9 having its side walls 10 upstanding, as shown in Fig. 3. The felt wiper 5 is provided with downturned sides 11 which are received between the outer walls of the chamber sections 7 and 8 and the upstanding walls 10 of the channel iron. Extending throughout each chamber section is a steam pipe 12. The wiper 5 and its associated parts are preferably suspended clear of the floor and for this purpose three pairs of uprights 15, 16 and 17 are provided, depending from some superstructure of the building in which the apparatus is placed.

The cans 19 (of the usual cylindrical type) are caused to travel over the wiper 5 with a rolling motion so that the absorbent material of which the wiper is composed may wipe the water from the cylindrical part of the cans. The chamber 6 heated by the steam pipes 12 evaporates the moisture taken up by the wiper. The wet cans are fed into the drying apparatus from the testing bath through a can run consisting of bottom and top guides 20 and 21 and the side rails 22. The lower end of the bottom guide 20 terminates at the right hand end of the channel iron 9, and the lower ends of the upper guide pieces 21 terminate substantially above the lower end of the bottom guide piece. The side rails, however, are continued throughout the length of the apparatus, where they are designated at 23.

The rolling motion is imparted to the cans by means of a belt 24 which passes over the pulleys 25 and 26 mounted on the shafts 27 and 28 respectively. The outer end of each shaft is journaled in a bearing 29 supported by a yoke 30 adjustably mounted in a bracket 31 adjustably secured to the upright rods 15 and 16. The slack in the belt 24 is taken up by means of an idler pulley 33 carried on the outer end of the arm 34 pivoted on the shaft 27. In order that the bottom section 35 of the belt 24 may be more effective in rolling the cans a series of leaf springs 36 are arranged to bear against the top surface of the lower section 35 of the belt. The leaf springs 36 are secured to the underside of the longitudinally disposed bar 38 supported at each end by a rod 37 depending

from the middle of the bars 38 supported by the split collars 39 mounted on the outer ends of the yokes 30. The wiper 5, the lower section 35 of the belt 24 and the side rails 23 constitute a can runway. A belt-driven pulley 40 drives the belt 24.

While the cans are being rolled over the wiper to dry the cylindrical part of the cans, hot, dry air is directed against the ends of the rotating cans, preferably against the lower halves thereof. For this purpose two hot air chambers which may conveniently be large pipes 41 and 42 are arranged above the line of traveling cans, one at each side thereof. The pipes 41 and 42 are provided with the downwardly and diagonally directed openings 43 through which hot air under pressure is directed against the ends of the cans. This hot air also serves to aid in evaporating the moisture taken up by the wiper. Air under pressure is admitted into the hot air chambers 41 and 42 through the pipes 45 which are connected with an air compressor or other source of compressed air. The air in the chambers 41 and 42 is heated by means of the steam pipes generally indicated at 46.

The can wiping apparatus is adjustable within certain limits for accommodating cans of different sizes. For this reason the supports for the belt 24 are adjusted vertically. The lateral adjustment for the side guide rails 23 is effected by connecting the rails 23 with the inner ends of the sliding bars 47, each of which is loosely mounted in the upper part of a block 48 supported on a cross piece 49 secured to the underside of the channel iron 9.

The hot air chambers 41 and 42 are supported at each end by the split collars 50, connected with and rising from the sliding bars 47. Thus when the side guide rails 23 are adjusted inwardly or outwardly to accommodate cans of different lengths, the hot air chambers 41 and 42 are shifted laterally at the same time and their proper relative position to the ends of the cans is thus maintained. The two hot air chambers and the side guide rails are shifted toward and from each other by manipulating the handles 51 secured to and depending from the longitudinally arranged rods 52 which are journaled at their outer ends in the lower parts of the blocks 48. The vertically arranged arms 53 secured at their lower ends to the rods 52 are loosely connected at their upper ends with the pins 54 which are threaded into the lower halves of the split collars 50.

It will now be understood that as the line of cans is delivered in a continuous stream from the testing bath to the improved drying apparatus the cans are caused to roll over the felt wiping surface 5 by the action of the belt 24, the heat from the chamber 6 serving to dry the wiper, so that by the time the cans reach the discharge end of the apparatus they are thoroughly dry. While the cylindrical part of the cans is being wiped dry by the action of the wiper 5 the ends of the cans are effectively dried by the streams of hot dry air directed against them through the apertures 43 in the hot air chambers 41 and 42.

Having thus described the invention what I claim as new is:—

1. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber, means for heating the chamber, absorbent material supported on the upper side of the chamber, means for rolling cans over the absorbent material, and means for directing a current of dry air against the ends of the cans.

2. An apparatus for drying cylindrical tin cans and the like comprising, an elongated strip of absorbent material constituting one side of a can runway, means for drying the absorbent material, a belt constituting the other side of the can runway for causing the cans to roll over the absorbent material, means for actuating the belt, and means for drying the ends of the cans.

3. An apparatus for drying cylindrical tin cans and the like comprising, a strip of absorbent material constituting one side of a can runway, a belt constituting the other side of the can runway for causing the cans to roll over the strip of absorbent material, means for actuating the belt, and means for drying the ends of the cans.

4. An apparatus for drying cylindrical tin cans and the like comprising, a straight surface constituting one side of a can runway and having thereon a strip of absorbent material, means for heating the surface to dry the absorbent material, a belt constituting the other side of the runway for causing the cans to roll over the strip of absorbent material, means for actuating the belt, and means for directing a current of dry air against the ends of the cans.

5. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber having a flat upper side, a strip of absorbent material supported on the upper side of the chamber, means for causing a series of cans to roll over the strip of absorbent material, and means for directing a current of dry air against the ends of the cans.

6. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber having a flat upper side, a strip of absorbent material supported thereon, means for heating the chamber to dry the absorbent material, means for causing a series of tin cans to roll over the absorbent material, a pair of perforated pipes arranged above and lengthwise of the chamber for directing a current of air against the ends of

the cans, means for heating the air in the pipes, and means for adjusting the position of the pipes.

7. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber having a flat upper side, a strip of absorbent material supported thereon and constituting one side of the can run, a belt constituting the other side of the can run and serving to cause a series of cans to roll over the absorbent material, means for driving the belt, resilient means for forcing the belt into contact with the cans, means for vertically adjusting the belt, a pair of perforated pipes for forcing air against the ends of the cans, and means for moving the pipes toward and from each other.

8. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber having a flat upper side, a strip of absorbent material supported thereon and constituting one side of a can run, means for heating the chamber to dry the material, a belt constituting the other side of the can run and serving to cause a series of cans to roll over the absorbent material, means for driving the belt, uprights, brackets for supporting the belt adjustably secured to the uprights, a longitudinal strip supported from the brackets, leaf springs secured to the longitudinal strip and bearing against the belt to force it into contact with the cans, and means for drying the ends of the cans.

9. An apparatus for drying cylindrical tin cans and the like comprising, an elongated straight surface having a strip of absorbent material thereon constituting one side of a can run, a belt constituting the other side of the can run and serving to cause a series of cans to roll over the absorbent material, means for driving the belt, uprights, brackets for supporting the belt adjustably secured to the uprights, a longitudinal strip supported from the brackets, leaf springs secured to the longitudinal strips and bearing against the belt and forcing it into contact with the cans, a pair of pipes arranged lengthwise of the elongated surface for directing a current of air against the ends of the cans, and manually operated means for moving the pipes toward and from each other.

10. An apparatus for drying cylindrical tin cans and the like comprising, an elongated chamber having a flat upper surface, a strip of absorbent material supported thereon constituting one side of a can run, means for heating the chamber to dry the absorbent material, a belt forming the other side of the can run and serving to cause a series of cans to roll over the absorbent material, means for driving the belt, vertically adjustable means for supporting the belt, a longitudinal strip supported from the vertically adjustable means and having resilient belt engaging means for forcing the belt against the cans, a plurality of perforated pipes for directing a current of air against the ends of the cans, means for heating and drying the air in the pipes, and means for moving the pipes toward and from each other.

11. An apparatus for drying cylindrical tin cans and the like comprising, a strip of absorbent material constituting one side of a can runway, means for causing the cans to roll over the strip of absorbent material, and means for drying the ends of the cans.

JAMES J. MURPHY.