

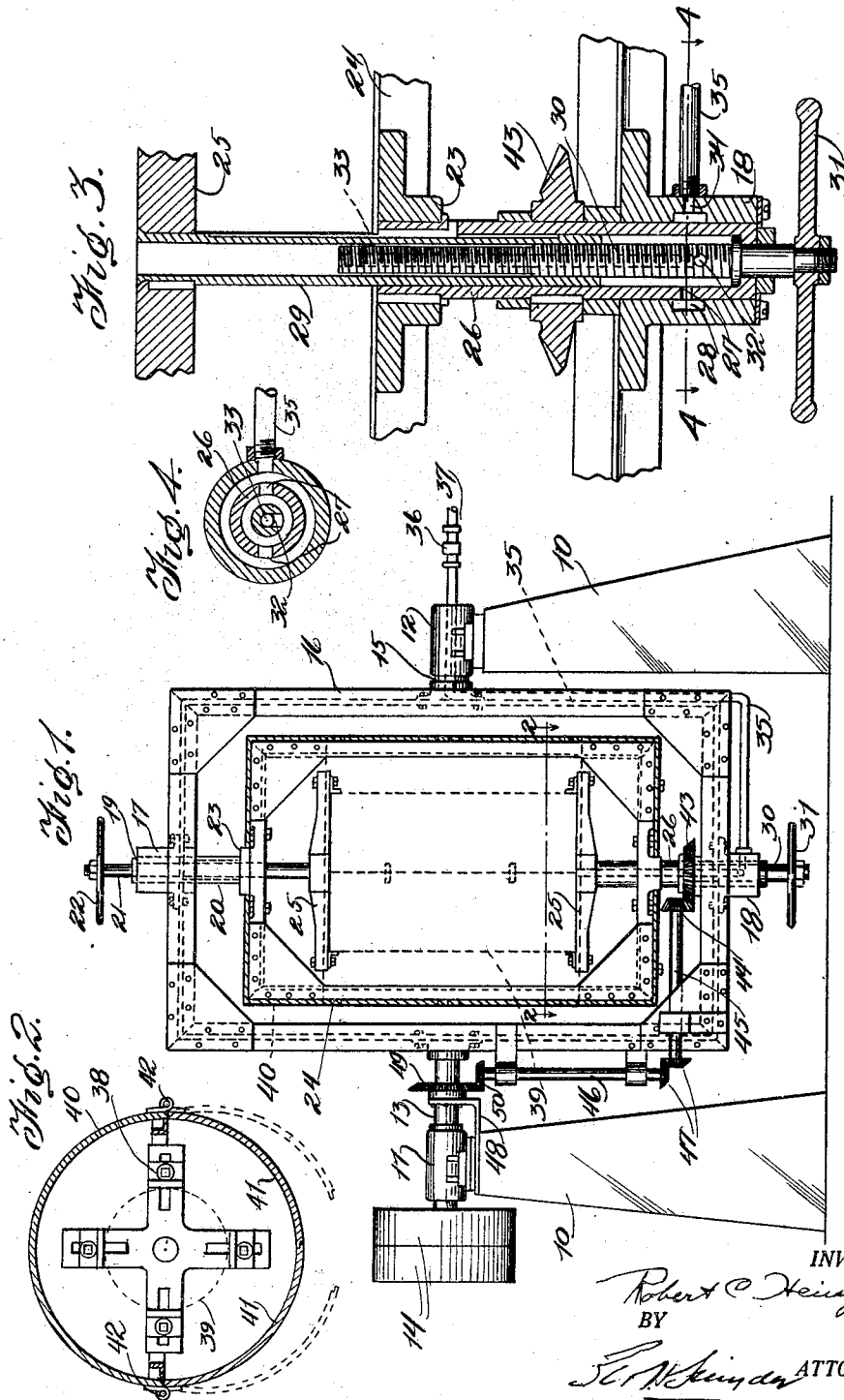
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DRUM COATING MACHINE

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DRUM-COATING MACHINE

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This invention relates to the conditioning of drums such as are used to ship various kinds of merchandise and has special reference to a machine for treating drums and the like. Still more particularly the invention relates to a machine for smoothly and evenly coating the interior of drums and the like.

One important object of the invention is to provide an improved and simplified general construction of such a machine wherein a drum may be evenly and uniformly coated on its interior and wherein the drum, either at rest or in the motion given it while being coated, may be treated with live steam or other aeriform fluid.

A second important object of the invention is to provide a machine of this character in which a drum being treated may be revolved on its axis and simultaneously revolved on an axis transverse the axis of the drum, the arrangement being obtained by a simple and efficient form of gearing.

A third important object of the invention is the provision of improved means for conducting live steam or other fluid into the drum during the revolution thereof.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Figure 1 is a side elevation of the improved device, the casing for holding the drum being shown in dotted lines in order to more clearly bring out the construction.

Figure 2 is a detail section through the casing and parts inside thereof on the line 2—2 of Figure 1.

Figure 3 is an enlarged detail view taken diametrically through one of the supporting shafts which support the drum for rotation on its axis, the view showing certain parts associated with said shaft.

Figure 4 is a detail section on the line 4—4 of Figure 3.

In the present embodiment of the invention there is provided a pair of standards 10 arranged in spaced relation and on these standards are mounted the respective bearings 11 and 12. Rotatable in the bearing 11 is a shaft 13 on the outer end of which are the fast and loose pulleys 14 of the usual construction, the fast pulley being used to rotate said shaft. Through the bearing 12 extends a hollow shaft 15 which is alined with the shaft 13 and these two shafts support a rectangular structural steel frame 16 here shown as being somewhat longer than its width. At each end of this structural steel frame and disposed centrally of the end are certain bearing members indicated respectively at 17 and 18. These members are bolted to the end members of the frame and revolvable in the member 17 is a sleeve 19 wherein slides a second sleeve 20 which is adjusted longitudinally of the sleeve 19 by means of an adjusting screw 21 provided with a hand wheel 22. The sleeve 20 is provided with a head 23 which is fixed to one end member of an interior frame 24 formed, like the outer frame, of structural steel. The sleeve 19 has fixed on the end which projects within this frame 24 a four armed chuck 25.

In the bearing 18 is mounted a sleeve 26 which is provided with one or more ports 27 which communicate with an annular channel 28 formed in the bearing 18. In this sleeve 26 is slidably mounted a second or inner sleeve 29 which is adjusted longitudinally of the sleeve 26 by means of a screw 30 having an operating handle 31. Extending into this screw is a port 32 which communicates with a passage 33 running through the screw to the inner end thereof and thus communicating with the interior of the sleeve 29. Connected with the channel 28 through a port 34 is a supply pipe 35 which extends upwardly and through the hollow shaft 15 and is connected by a swivel joint 36 to a supply main 37. On the sleeve 29 is fixed a second chuck 25. These chucks are provided with jaws 38 which have a bolt and slot connection with the arms of the chuck so that the size of the

chuck can be adjusted to grip any diameter, within the range of the apparatus, of drum 39.

Surrounding the inner frame, drum and chucks, is a casing 40 having two hinged sections or doors 41 which may be swung open on hinges 42 so as to afford access to the interior but which doors, when closed, seal the casing in a substantially hermetic manner.

Keyed on the sleeve 26 is a bevel gear 43 which meshes with a bevel gear 44 fixed on a shaft 45 supported in suitable bearings on the frame 16. Extending along one of the side members of this frame is a second shaft 46 and bevel gears 47 serve to connect these two shafts 45 and 46. Mounted on the support 10 is a bracket 48 which has an arm surrounding the shaft 13 and immovably fixed to this bracket is a bevel gear 49 which meshes with a bevel gear 50 fixed on the shaft 46. It will be obvious that the shaft 13 rotates freely in the bevel gear 49.

In the operation of the device the doors 41 are opened and the drum inserted in the casing 40. The chucks 25 are adjusted to bring them against the ends of the drum with the latter disposed centrally in the casing, the jaws 38 being adjusted to grip against the sides of such drum. In treating a number of drums it will be merely necessary to adjust the jaws 38 for the proper diameter and then by manipulating one wheel as either the wheel 22 or the wheel 31, the drums may be gripped or freed as desired. With the drum in position the doors 41 are closed. The belt, which drives the device, is then shifted on to the fixed pulley whereupon the frame 16 will be revolved on an axis passing through the axis of the drum at right angles thereto. As this frame revolves the shaft 46 will be revolved because it will be carried around the fixed wheel 49. The revolution of the shaft 46 will of course revolve the shaft 45 and this in turn through the gears 44 and 43 will revolve the sleeve 26 and rotate the casing and drum on the axis of the latter. Obviously, by opening a valve in the main 37 fluid such as live steam will pass through the pipe 35, channel 28, port 27 into the inside of the sleeve 26 and from there through the port 32, passage 33 and sleeve 29 into the drum which is of course provided with a suitable opening in its end. Thus if desired chemical can be introduced into the drum and the rotation about the two axes will spread the chemical entirely smoothly over the entire inner surface of the drum. Similarly, the pipe 35 may be brought into communication with a source of steam and steam may be introduced.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, therefore, desired to

confine the invention to the exact form herein shown and described, but it is desired to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:

1. In a machine of the class described, a frame, mountings in said frame for a drum, a casing adapted for hermetic sealing, holders coacting with the mountings for the casing, means to rotate said frame on an axis transverse the axis of the casing, means to rotate the casing on its axis simultaneously with the rotation of the frame, and means to introduce fluid directly into said casing through one mounting during the rotation of said casing.

2. In a machine of the class described, a frame, a drum holder mounted in said frame and including a casing adapted for hermetic sealing, chucks in said casing, means to support said casing rotatably on its axis in said frame, means operable exteriorly of the supporting means to adjust the chucks toward and from each other, means to rotate the casing on its axis, and means to rotate the frame on an axis transverse the axis of the casing.

3. In a machine of the class described, a frame, a drum holder mounted in said frame and including a casing adapted for hermetic sealing, chucks in said casing, means to support said casing rotatably on its axis in said frame, means operable exteriorly of the supporting means to adjust the chucks toward and from each other, stub shafts on opposite sides of said frame, bearings supporting said stub shafts, driving means for one of said stub shafts, a fixed gear surrounding one of the stub shafts, and gearing connecting said fixed gear and one of the supporting means for the casing.

4. In a machine of the class described, a frame, a drum holder mounted in said frame and including a casing adapted for hermetic sealing, chucks in said casing, means to support said casing rotatably on its axis in said frame, means operable exteriorly of the supporting means to adjust the chucks toward and from each other, means to rotate the casing on its axis, means to rotate the frame on an axis transverse the axis of the casing, and means to introduce fluid into said casing during the rotation thereof.

5. In a machine of the class described, a frame, a drum holder mounted in said frame and including a casing adapted for hermetic sealing, chucks in said casing, means to support said casing rotatably on its axis in said frame, means operable exteriorly of the supporting means to adjust the chucks toward and from each other, stub shafts on opposite sides of said frame, bearings supporting said stub shafts, driving means for one of said stub shafts, a fixed gear surrounding one of

the stub shafts, gearing connecting said fixed gear and one of the supporting means for the casing, and means to introduce fluid into said casing during the rotation thereof.

5 6. In a machine of the class described, a pivotal frame, a casing for a drum rotatably supported in the frame, hollow shafts extending centrally from the ends of said casing, internally threaded sleeves each slidably
10 mounted in a respective hollow shaft, screws extending into the hollow shafts and each engaging the internal threads of a respective sleeve, chucks mounted on the adjacent ends of said sleeves and means externally of the
15 frame for manually adjusting the screws.

7. In a machine of the kind described, a rotatable element, means opposite each other for removably supporting a drum, and rotatable on an axis at right angles to the axis
20 of rotation of the element, a sealing closure on the element for enclosing the drum, means for independently adjusting said means and operable exteriorly of the element, and means effecting a fluid way through the element, one
25 of the first named means, and closure for direct communication with the drum.

8. The combination with a rotary frame, a casing supported within the frame, and rotatable on an axis at right angles to the axis
30 of movement of the frame, of clamping chucks for a drum within the casing, extensible members for the chucks mounted at the axis of the casing, means manually operable exteriorly of the frame for actuating
35 the members, and a fluid supply means having its path through one member and said means for direct communication with the drum when within the casing.

9. In combination, a casing having an opening for the admission of a drum and provided with a closure for closing said opening,
40 chucks within said casing for supporting a drum in spaced relation to the casing walls, said chucks being provided with means operable from the exterior of the casing for effecting movement of the chucks toward and
45 from each other, and means for mounting said casing to effect rotation thereof on axes at right angles to each other.

10. In combination, a casing having an opening for the admission of a drum and provided with a closure for closing said opening,
50 chucks within said casing for supporting a drum in spaced relation to the casing walls, said chucks being provided with means operable from the exterior of the casing for effecting movement of the chucks toward and
55 from each other, means for mounting said casing to effect rotation thereof on axes at right angles to each other, and means to introduce fluid into said casing during rotation thereof.
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