June 13, 1933. C. C. FARRINGTON 1,913,979

DRUM CLEANING MACHINE

Filed Oct. 26, 1929 2 Sheets-Sheet 1

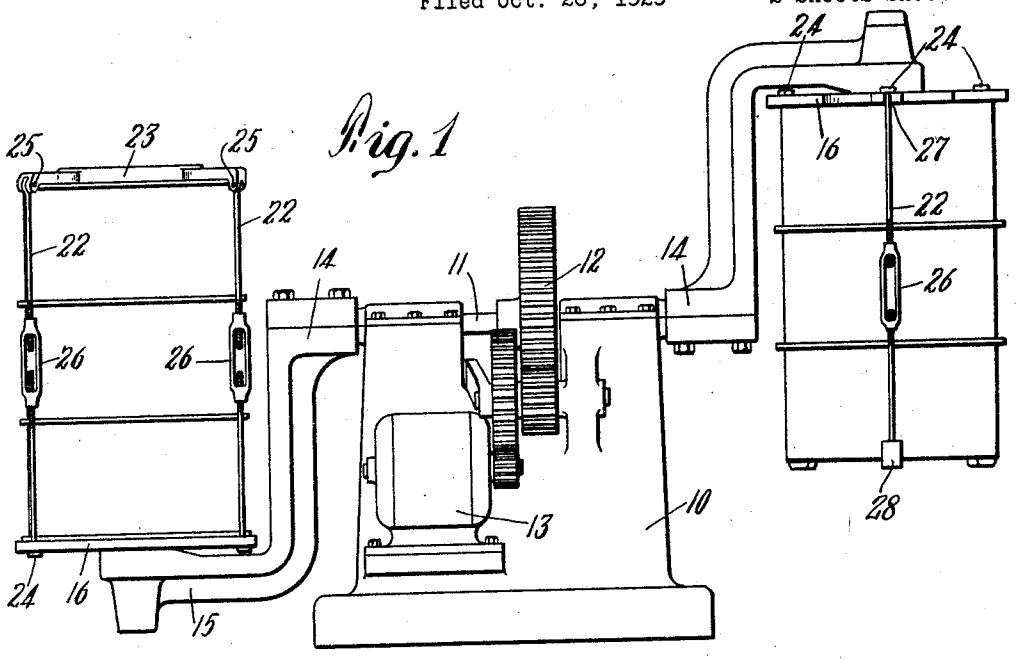


Fig. 1

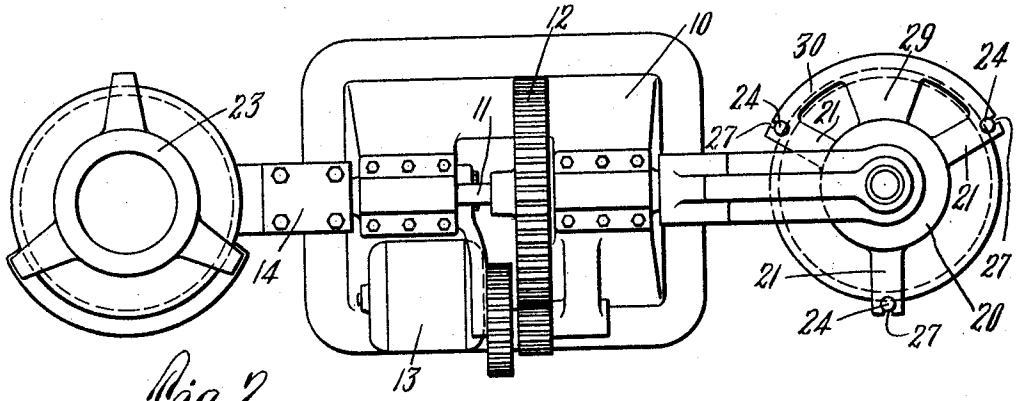


Fig. 2

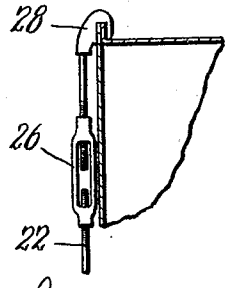


Fig. 3

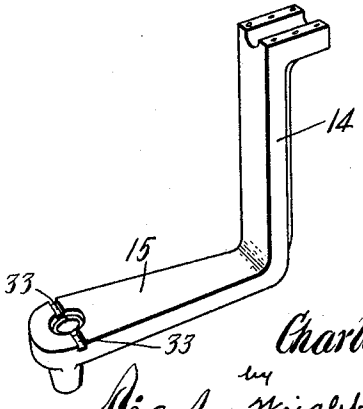


Fig. 4

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DRUM CLEANING MACHINE

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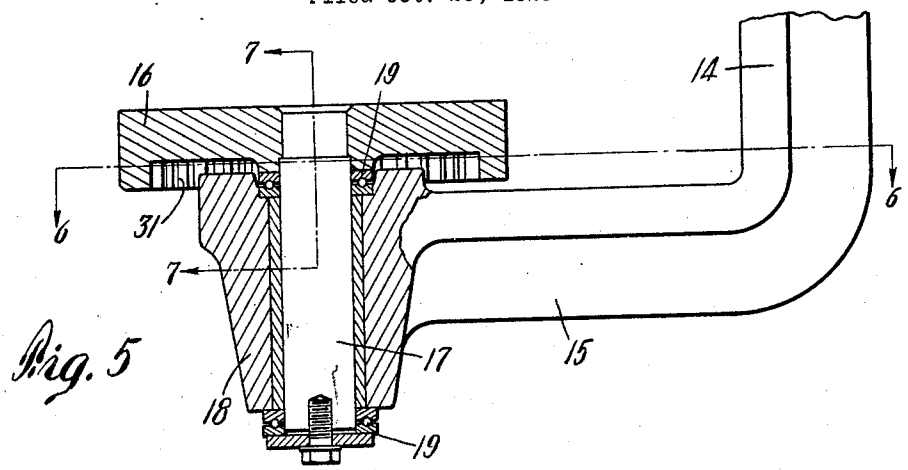


Fig. 5

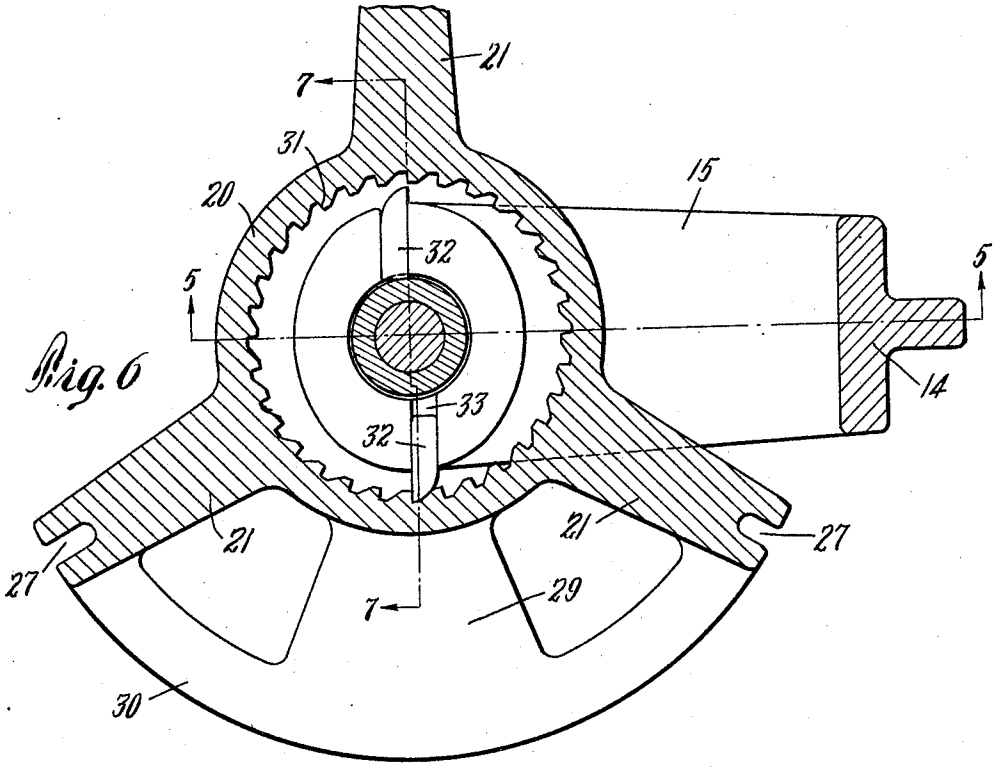


Fig. 6

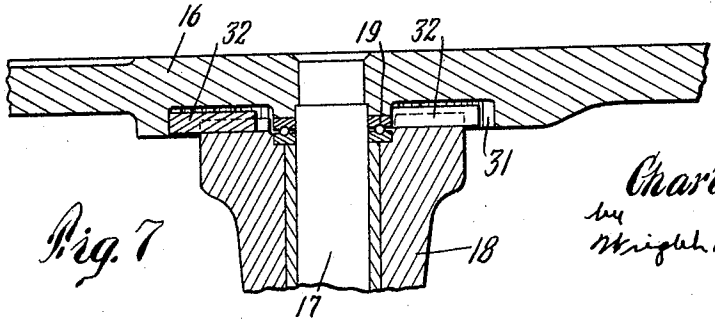


Fig. 7

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UNITED STATES PATENT OFFICE

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DRUM CLEANING MACHINE

Application filed October 26, 1929. Serial No. 402,580.

This invention relates to mechanism for tumbling drums, barrels, or the like, and at the same time causing the drums or barrels to rotate on their own axes so that solvents and abrasive materials which have been introduced into the drums will scour all the portions of the interior thereof so as to remove the residual portions of the original content of the containers which may adhere to the inner surface.

The invention is applicable to the tumbling of containers which have held any commodity, but is particularly useful for containers which have held paint or the like. When such containers have been practically emptied they are customarily returned to the manufacturers for refilling. Before the refilling it is necessary to scour out the residual paint to put the container in condition to receive a fresh supply of paint. Since the old paint is apt to harden on the inner walls of the container, it is necessary to agitate abrasive materials such as chains or the like together with suitable solvents, within the container. In order to effect a suitable degree of agitation it may be advantageous to tumble the container end to end. This causes the abrasives to drag over the inner surface of the container, and, with the aid of the solvents, to loosen and remove from the walls of the container the paint or other substance therein.

In order to ensure thorough action of the abrasives on all portions of the interior, it is necessary to rotate the drum on its own axis as it is tumbled end for end. By the present invention this may be accomplished with a simple apparatus by constructing and arranging a platform or base to which each drum is clamped in such a manner that the weight of the base and drum is unsymmetrically distributed about the axis of rotation of the base itself so that as the base and drum are tumbled end for end the lack of balance of the weight of the base and drum causes rotation on the axis of the base as the drum is tumbled. Means are provided according to the present invention for restricting the rotation of the base on its axis to one direction only, so that the end for end revolution of the drum and base results in a uni-directional rotation thereof about the axis of the base as is hereinafter more fully explained. This results in an effective and very simple apparatus which is relatively economical to construct.

For a more complete disclosure of the invention reference may be had to the description thereof which follows and to the illustration on the drawings, of which,—

Figure 1 is an elevation of an embodiment of the invention.

Figure 2 is a plan view of the same.

Figure 3 illustrates a portion of a clamping member adapted to clamp a steel drum to a base.

Figure 4 is a perspective view of a portion of the mechanism shown in Figure 1.

Figure 5 is a detail of a portion of Fig-1, part of which is shown in section.

Figure 6 is a section on the line 6—6 of Figure 5.

Figure 7 is a section on the line 7—7 of Figures 5 and 6.

Referring to the drawings in detail, the tumbling mechanism as a whole may comprise a suitable heavy standard 10 on which is journaled a horizontal shaft 11, this shaft being driven by suitable means as for example a gear train 12 connected to a motor shaft 13. On one or both ends of the shaft 11 may be fixed a knee 14 having an arm 15 extending parallel to the shaft 11 and laterally spaced therefrom, the knee 14 and the arm 15 constituting a crank-shaped supporting member for a platform or base 16 which is rotatably mounted on the arm 15, the axis of rotation being preferably substantially perpendicular to the axis of rotation of the shaft 11. The rotatable mounting of the base 16 on the arm 15 may be accomplished in a variety of ways. As illustrated in Figure 5, an axle 17 is secured to the base 16 and journaled in a bearing portion 18 of the arm 15, suitable ball bearings 19 being provided as desired to facilitate rotation of the base 16 on its axis. The base 16 may be of any suitable shape capable of receiving an end of a drum or barrel. As shown in Figures 2 and 6 it may comprise

a central portion 20 having a number of arms 21 extending radially outward therefrom, three such arms being illustrated.

A drum or barrel to be cleaned may be set upon the platform or base 16 and clamped thereon as by a number of rods 22 each of which may be secured to the base 16 at one end, and to a platform 23 at the other end, as shown in Figure 1. Each tie rod 22 may be provided with a head 24 at one end and may be hinged as at 25 at the other end, a turnbuckle 26 being employed to draw the platforms 16 and 23 together to clamp a drum or barrel between them. The periphery of the platform 16 may be suitably notched as at 27 to receive the shanks of the tie rods 22 adjacent to their heads 24 and thus to facilitate the adjustment of the clamping means to the platform 16.

A modified form of clamping member is illustrated in Figure 3. In the form therein shown, the end of the tie rod 22 remote from the head 24 is provided with a suitable hook 28 adapted to catch on the chime of a drum or barrel as shown. This form of clamping device eliminates the platform 23. The axis of rotation of the platform 16 and of a drum or barrel mounted thereon is preferably in a plane perpendicular to the axis of the shaft 11. Thus it is obvious that rotation of the shaft 11 will result in an end for end tumbling motion on the part of the drum or barrel. A chain or other abrasive object within the barrel will thus slide from one end to the other, across the head of the drum, and then back to the opposite end of the drum.

To secure a scouring contact with all of the inner surface of the drum it is desirable to rotate the drum on its own axis while it is being tumbled in end for end motion. If the distribution of the weight of the platform and drum about the axis of rotation of the platform is unsymmetrical, when this axis reaches a substantially horizontal position in its revolution about the shaft 11, the lack of symmetry or balance of the base and drum will cause the drum to rotate on its axis as the heavy side is pulled downwardly by gravity. This lack of symmetry may be brought about in a variety of ways such as eccentric mounting of the base 16 on its axle 17, or eccentric mounting of the drum on the base 16. As shown, a suitable weight may be attached to or formed with the base 16 to throw it out of balance. As shown in Figure 6, this weight may comprise a sector 29 which may be formed at some point on the periphery of the center portion 20 of the base and may be reinforced by an arcuate member 30 which extends between two of the arms 21, its weight also acting to unbalance the platform. If the weight 29 is arranged on one side or the other of the plane in which the axis 17 swings, when this axis approaches a horizontal position the weight 29 will tend to fall. Its momentum will carry it beyond center after the manner of the swing of a pendulum. To ensure continuous rotation in a single direction, the central portion 20 of the base may be hollowed out with a ratchet 31 on its inner wall. For cooperating with this ratchet a pair of suitable pawls 32 may be provided, these pawls being adapted to slide in slots 33 arranged in the radial bearing member 18 of the arm 15. As shown, these pawls are so arranged that when the axle 17 approaches a horizontal position, one or the other will be pulled by gravitational traction into engagement with the teeth of the ratchet 31. Thus the rotation of the drum in a single direction is maintained, since the weight 29 having once swung beyond center, cannot swing back again during the same half revolution of the shaft 11. As the base and drum are revolved over toward the opposite horizontal position of the axle 17, gravity again acts on the weight 29 to continue the rotation of the base and drum carried thereby.

I claim:

1. Mechanism of the class described comprising a support, a member rotatably mounted on said support, said member having its weight unsymmetrically distributed about the axis of its rotation on the support, means for revolving said support and member about an axis at an angle to the vertical, and means for preventing rotation of said member on its axis in one direction only.

2. Mechanism of the class described comprising a support, means for revolving said support about a horizontal axis, a member carried by said support and rotatable with respect thereto on an axis substantially perpendicular to the axis of revolution of said support, said member having its weight unsymmetrically distributed about its axis of rotation, and means for preventing rotation of said member on its axis in one direction only.

3. Mechanism of the class described comprising a support revoluble on a horizontal axis, a base mounted on said support and rotatable on an axis at an angle to the axis of said support, said base having its weight unsymmetrically distributed about its axis of rotation, means for preventing rotation of said base in one direction only, means for securing a drum or the like to said base, and means for revolving said support and base.

4. Mechanism for tumbling a drum or the like which comprises a support member revoluble about an axis at an angle to the vertical, a rotatable base journaled in said member for free rotation thereon about an axis substantially perpendicular to that of said member, means carried by said base for releasably securing a drum or the like

thereto with the combined weight of the base and drum unsymmetrically distributed about the axis of rotation of the base, means for preventing the rotation of said base about its axis in one direction only and means for continuously revolving said support.

5. Mechanism of the class described comprising a shaft, means for revolving said shaft on a horizontal axis, a single knee member secured to each end of said shaft, each said knee member having an arm projecting parallel to said axis and laterally spaced therefrom, a base for a drum or the like mounted on each of said arms for free rotation on axes perpendicular to the axis of rotation of said shaft, means carried solely by each said base for clamping a drum or the like thereon, and ratchet means for preventing rotation of each base on its axis in one direction only.

6. Mechanism of the class described comprising a support revoluble on a horizontal axis, a base mounted on said support by a single bearing only for rotation about an axis at an angle to the axis of rotation of said support, said base being of a size and shape to be engaged by the chime of a drum to be carried thereby, and means carried by said base for clamping a drum or the like endwise thereon, said means including tension members projecting from the base, and gripping elements on said tension members to engage the chime of a drum on the base at the end of the drum remote from the base.

7. Mechanism of the class described comprising a support revoluble on a horizontal axis, a base mounted on said support by a single bearing and rotatable in said bearing about an axis substantially perpendicular to the axis of rotation of said support, clamping means carried by said base for holding a drum or the like end-on against the base, said means including tension members projecting from said base and gripping elements on said tension members to engage the chime at the remote end of a drum on said base.

In testimony whereof I have affixed my signature.

CHARLES E. FARRINGTON.