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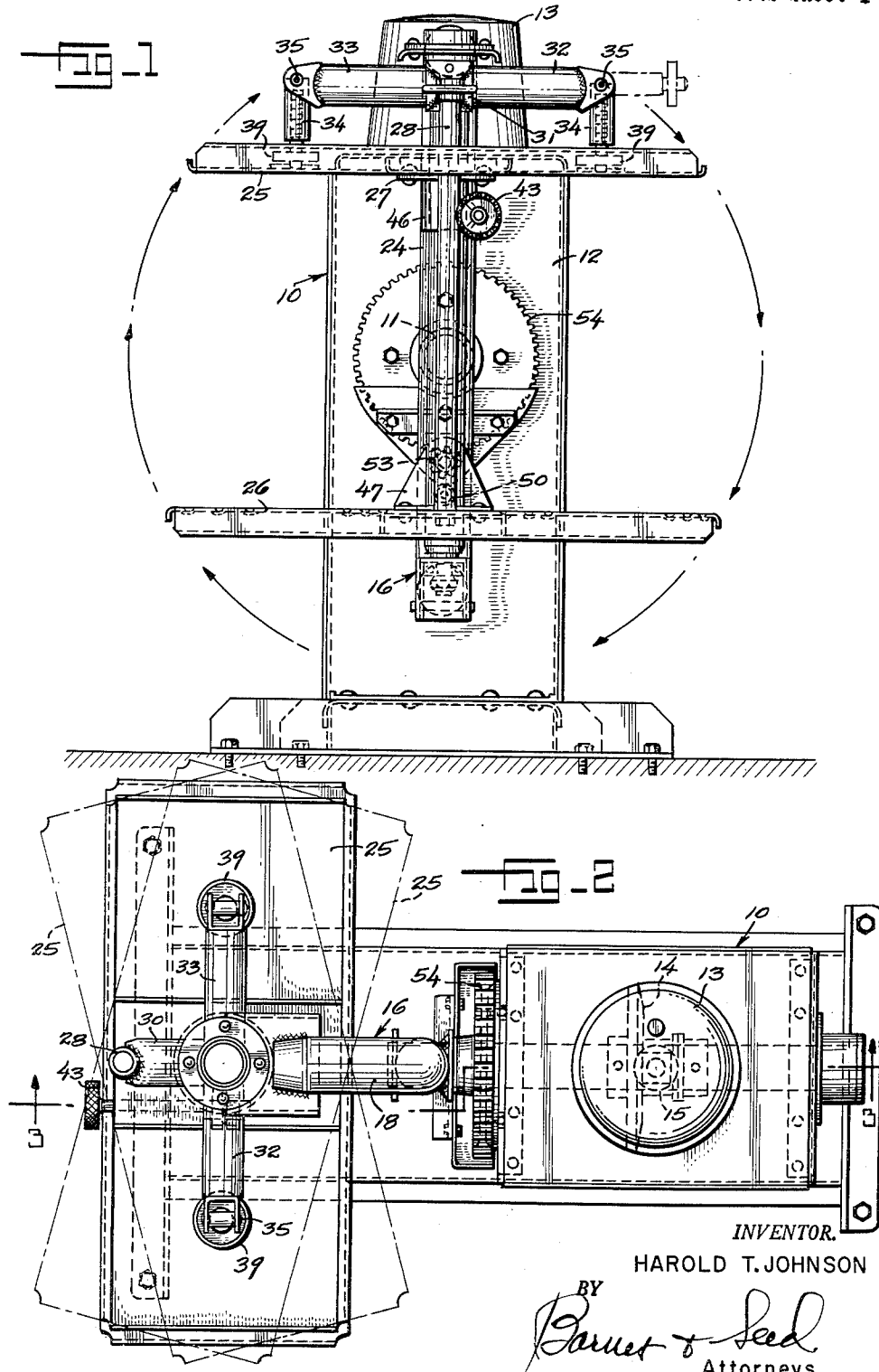
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3,018,092

PAINT-CAN SHAKER

Filed June 12, 1958

3 Sheets-Sheet 1



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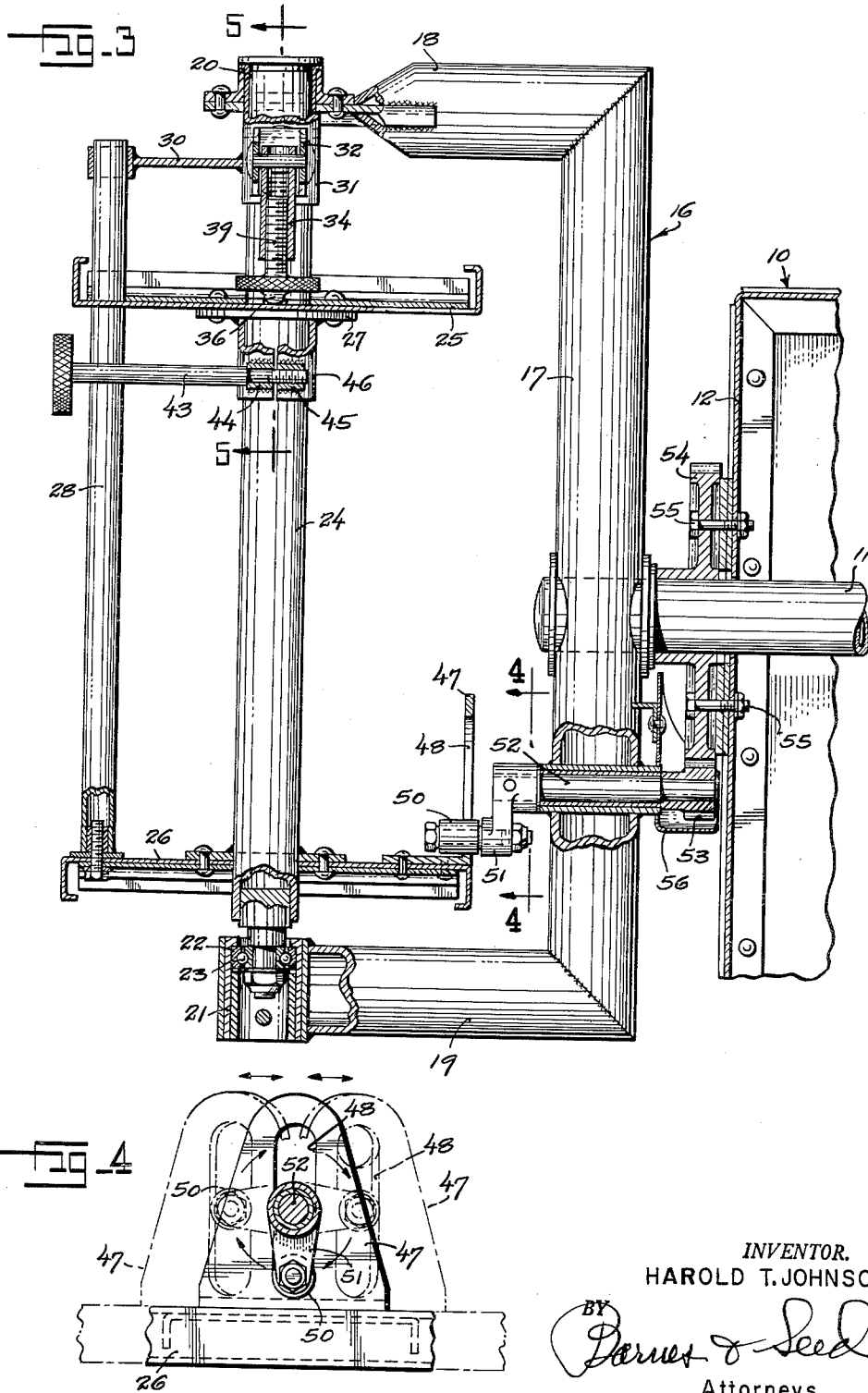
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3 Sheets-Sheet 2



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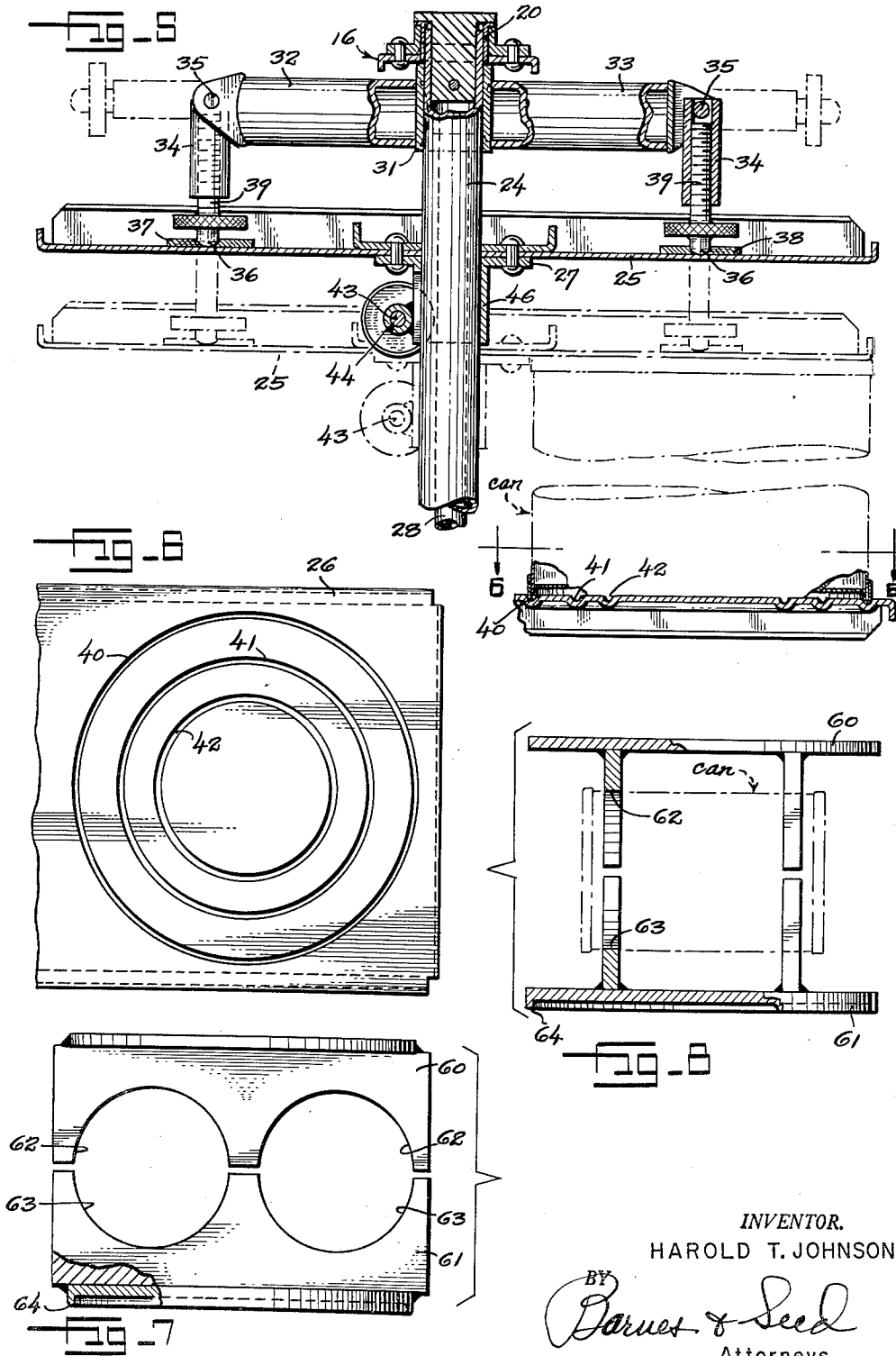
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3 Sheets-Sheet 3



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3,018,092

**PAINT-CAN SHAKER**

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This invention relates to a machine for shaking cans of paint in order that the ingredients may be thoroughly mixed before the can is opened preparatory to applying the contained paint. For its general object the invention aims to provide a relatively fool-proof machine of inexpensive and sturdy construction which will accomplish its intended end, that of mixing paint which has been standing in a can, with unusual rapidity and with considerably greater efficiency than has been heretofore possible.

It is a more particular object of the invention to provide a machine for the above purpose operative to actively vibrate the same while at the same time turning the can end-for-end.

As a further object the invention purposes to provide a paint-shaking machine permitting cans containing paint to be applied to and removed from the machine with ease and expedition, and which accommodates itself to two gallon, two quart or two pint cans, or with a set of adapters, to various combinations of such can sizes.

The above and other still more particular objects and advantages in view will appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIGURE 1 is a view in front elevation representing a can-shaking machine constructed to embody the preferred teachings of the present invention, with arrows indicating the orbital travel to which the can carrier admits.

FIG. 2 is a top plan view thereof and representing in phantom the two extremes of the can carrier's vibrating rocker motion.

FIG. 3 is a longitudinal vertical sectional view drawn on line 3—3 of FIG. 2.

FIG. 4 is a fragmentary transverse vertical sectional view drawn on line 4—4 of FIG. 3 and incorporating a phantom disclosure of the extremes of motion to which the concerned parts admit.

FIG. 5 is a fragmentary transverse vertical sectional view drawn to an enlarged scale on line 5—5 of FIG. 3.

FIG. 6 is a fragmentary top plan view of the can carrier's base plate.

FIG. 7 is a front elevational view illustrating an accessory part for the machine which enables either side of the can carrier to handle two rather than a single can; and

FIG. 8 is a side elevational view of said accessory with parts broken away and shown in section.

A frame for the present invention is illustrated as comprising a box standard 10. A drive shaft 11 is journaled in said standard for rotation about a horizontal axis, with one end projecting forwardly beyond the front wall 12 of the standard, and an electric motor 13 surmounts the standard with its armature shaft depending into the latter and connecting by reduction gears 14—15 with the housed end of the shaft. A yoke 16 is fixed by its cross-arm 17 to said exposed forward end of the drive shaft. Upper and lower side arms 18 and 19 of the yoke extend forwardly, and a bushing 20 is received in the outer end of the upper such arm while the lower arm carries a coaxially placed terminal sleeve 21. The outer race 22 of a ball bearing 23 is secured in said sleeve. The ball bearing and the bushing provide a thrust and journal mounting for the two ends of a rock shaft 24.

Such rock shaft 24 has a head plate 25 and a base plate 26 associated therewith, each having a generally rectangular plan configuration and occupying planes normal to the axis of the rock shaft with the base plate anchored to the rock shaft at a point proximal to the lower end thereof. The head plate is attached to a hub section 27 received for endwise sliding movement upon the rock shaft, and finds an additional slide journal from a post 28 which rigidly surmounts the base plate parallel with and spaced to the front of the rock shaft. The upper end of this post is fixedly held by an arm 30 extending forwardly from a spider 31 pinned or otherwise secured to the rock shaft, such spider also presenting two stiff arms 32 and 33 which extend laterally in opposite directions from diametrically opposite sides of the rockshaft. A respective internally threaded thimble 34 is pivoted suspended, as at 35, from the outer end of each of said radial arms 32 and 33, and a respective jack-screw 39 works in these thimbles, each presenting upon its free lower end a rounded foot 36 stepped in a mating socket provided by a bearing plate, as 37 and 38, which surmounts the head plate 25.

The function of the head and base plates 25 and 26 is to produce jaws which grip a paint can or cans therebetween, and it will be seen from an inspection of FIGS. 5 and 6 that the can is localized upon the base plate by employing a selected one of three concentric circular grooves recessed into the upper surface of such plate. These grooves, designed by 40, 41 and 42, accommodate the downwardly protruding peripheral lips occurring upon the bottoms of all paint cans, uniformly sized as between all gallon, all quart, and all pint cans. After seating such lip in the proper groove, the head plate is slid downwardly onto the head surface of the can and tensioned against the same by means of the jack-screws. A clamping screw 43, working through co-axial ears 44 and 45 carried by a split extension 46 of the hub section 27, augments the thread purchase of the jack-screws in assuring immovability of the head plate during a can-shaking operation.

Reverting now to the shaker action, it will be seen that along the inner edge at a point central to the length there is provided a surmounting bracket 47. A vertical slot 48 is formed in this bracket. Working in the slot is a roller 50 carried by a crank arm 51. The crank arm is pinned to the outer end of a planetary spindle 52 journaled through a bushing which traverses the lower section of the yoke 16 on an axis offset from and paralleling the drive shaft 11. A planetary pinion 53 on the inner end of said planetary spindle meshes an externally toothed gear wheel 54 disposed concentric to the drive shaft and held stationary upon the front face of the box standard 10 by bolts 55. 56 designates a shield for the planetary pinion. It will be apparent, as the planetary spindle orbits about the center of the drive shaft responsive to shaft-driven rotation of the yoke, that the action of the planetary pinion 53 as it tracks about the gear wheel 54 imparts rotation to said spindle. The relative size of the pinion 53 by comparison with gear wheel 54 is such as to make the revolutions at which the carrier is turned quite low by comparison with the frequency at which the carrier is rocked. The responsive crank motion of the roller 50 acts through the slotted bracket 47 to rock the rock shaft 24. There thus occurs a compounding of two motions: (1) bodily turning of the can carrier about a horizontal axis, and (2) rocking of the carrier about an axis. It will be noted that the parts are constructed and arranged such that a can of paint may be secured to the carrier in such a manner that a greater portion of its length lies to one side than to the other side of a plane located normal to the longitudinal axis of the can and including the axis of rotation of the drive shaft 11. The result is to give an endwise motion to the can which

performer augments the rocker action normal to said turning axis.

In FIGS. 7 and 8 I have shown an attachment permitting the can carrier to adapt itself to the simultaneous shaking of either four pint cans or two pint cans and any one other size can. This attachment is comprised of sets of two adapter blocks 60 and 61 one of which has two re-entrant openings 62 each of which is arranged to saddle a respective one of two pint cans laid on side, and the other of which underlies the cans and presents correspondingly shaped re-entrant openings 63 opposing the saddle openings 62 of the upper block. Such lower block has upon its underside a circular ridge 64 which finds a mating fit in the circular groove 40 of the base plate 26.

It is thought that the invention will have been clearly understood from the foregoing detailed description of my now preferred illustrated embodiment. Changes in the details of construction may be resorted to without departing from the spirit of the invention and it is accordingly my intention that no limitations be implied and that the hereto annexed claims be given the broadest interpretation to which the employed language admits.

What I claim is:

1. In a paint can shaker, a mounting standard, a drive shaft supported by said standard for rotation about a horizontal axis, drive means for rotating said shaft, a yoke carried upon an exposed end of said drive shaft providing yoke arms which extend outwardly parallel to one another and to the rotary axis of the drive shaft, a can carrier attached to the yoke arms so as to occupy a position between the same and journaled for rocker motion about an axis normal to the rotary axis of the drive shaft, means for securing a can of paint to said carrier, and means for imparting rocker motion to the can carrier coincident with rotation of the drive shaft.

2. In a paint can shaker, a mounting standard, a yoke supported by said standard for rotation about an axis lying between and parallel with yoke arms provided by the yoke, a can carrier carried by the yoke arms so as to occupy a position between the same and journaled therefrom for rocker motion about an axis normal to the rotary axis of the yoke, means for securing a can of paint to the carrier, and means for simultaneously rotating the yoke and imparting rocker motion to the can carrier.

3. In a paint can shaker, a mounting standard, a yoke supported by said standard for rotation about an axis lying between and parallel with yoke arms provided by the yoke, a can carrier carried by the yoke arms so as to occupy a position between the same and journaled therefrom for rocker motion about an axis lying at cross angles to the rotary axis of the yoke, means for securing a can of paint to the can carrier, and means for simultaneously rotating the yoke and imparting rocker motion to the can carrier.

4. In a paint can shaker, a mounting standard, a yoke supported by said standard for rotation about an axis lying between and parallel with yoke arms provided by the yoke, a can carrier carried by the yoke arms so as to occupy a position between the same and journaled therefrom for rocker motion about an axis lying at cross angles to the rotary axis of the yoke, means for securing at least two cans of paint to the can carrier so that one can lies at one side and the other can at the other side of the carrier's rocker axis, and means for simultaneously rotating the yoke and imparting rocker motion to the can carrier.

5. In a paint can shaker, a can carrier, means for securing a can of paint thereto, a means operatively interconnected with the carrier for turning the carrier about an axis which is at right angles to the longitudinal axis of the can and by said turning causing the secured can to turn end for end, and means also operatively interconnected with the carrier and operating at the same time

said turning means operates acting to rock the carrier about an axis lying at right angles to said axis about which the carrier is turned.

6. In a paint can shaker, a can carrier, means for securing a can of paint thereto, and separate means each operatively interconnected with the carrier for turning the carrier about one axis and at the same time rocking the carrier about a second axis, said axis about which the carrier is rocked paralleling the longitudinal axis of the secured can, the axis about which said carrier is turned lying approximately at right angles to the axis about which said carrier is rocked and traversing the can between the end limits thereof so as to turn the can end for end.

7. A shaker according to claim 6 characterized in that said means for securing the can to the carrier permits said can to be so secured that a greater portion of its length measured along the longitudinal axis lies to one side than to the other side of a plane which is located normal to said longitudinal axis and includes the axis about which said carrier is turned.

8. In a paint can shaker, a yoke presenting a cross-arm with side arms at each end thereof and rigidly stemming from a rotary shaft which extends from the cross-arm in a direction opposite the side arms and approximately midway between the two, a can carrier supported for rocker movement from the side arms of the yoke to occupy a position in the open throat of the yoke, means for rotating the shaft, a planetary spindle movable bodily with the cross-arm of the yoke and receiving a journal therefrom for rotation about an axis lying in offset paralleling relation to the rotary axis of the shaft, a pinion on one end of said spindle meshing a stationary ring gear mounted in surrounding concentric relation to the shaft, a crank arm on the other end of said spindle, and a roller mounted on the free end of said crank arm working in a slot presented by the can carrier so as to rock the can carrier simultaneously with rotation of the yoke.

9. Structure according to claim 2 characterized in that means is provided such that a can of paint may be so secured to the can carrier that a point bisecting the can on its longitudinal axis is offset in a substantial degree from a plane located normal to said longitudinal axis and including the axis of rotation of the yoke.

10. Structure according to claim 2 in which said can carrier comprises opposing can-clamping jaws movable directly toward and from one another into positions whereat one jaw engages one end and the other jaw the other end of a paint can, at least one of said jaws comprising a plate presenting a plurality of concentric circular surface grooves each of a diameter accommodating the marginal lip extending about the rim of a respective one of several different standard sizes of paint cans.

11. Structure according to claim 10, and a set of adapter blocks removably associated with said jaws adapting the jaws so that the same act to grip a pair of paint cans laid on edge so that the longitudinal axes thereof parallel one another in a common plane lying normal to the rocker axis of the carrier.

12. The can shaker recited in claim 5 characterized in that the means for turning and rocking the carrier so performs said functions that the revolutions at which the carrier is turned are quite low by comparison with the frequency at which the carrier is rocked.

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