PAINT CAN SHAKER AND MIXER

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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My invention relates generally to paint can shaker and mixing devices, and more particularly, to power-operated structures of this character.

Devices of the class above described are old in the art, and are available for shake-mixing of single paint cans or for simultaneously shaking a pair of such cans.

The primary object of my invention is to provide simple and highly efficient means for quickly but safely clamping the cans between clamping plates or jaws, and which may be utilized in connection with shake-mixing devices of the single-can or double-can type.

A further object of my invention is the provision of a device of the class described in which the gripping pressure exerted upon the can or cans is such as to avoid crushing or denting of the can surfaces during clamping operations.

A further object of my invention is the provision of a device of the class above described which, when applied to the double-can type, applies detachable clamping and unclamping pressures to the cans simultaneously.

A further object of my invention is the provision of a device of the class above described which is relatively inexpensive to produce, which involves but a minimum of working parts, is foolproof in operation, and is rugged and durable.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims, and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

FIG. 1 is a view in elevation of a paint can shaker-mixer in accordance with my invention;

FIG. 2 is a view in side elevation as seen from right to left of FIG. 1;

FIG. 3 is an enlarged fragmentary sectional view taken on the line 3—3 of FIG. 1;

FIG. 4 is an enlarged fragmentary view in section as taken from the line 4—4 of FIG. 1;

FIG. 5 is a fragmentary view in top plan as seen from the line 5—5 of FIG. 1;

FIG. 6 is a view in vertical section as seen from the line 6—6 of FIG. 2, on an enlarged scale; and

FIG. 7 is a view in vertical section as seen from the line 7—7 of FIG. 2, on an enlarged scale.

Referring with greater particularity to the drawings, the numeral 10 indicates a support base upon which is carried a frame structure, identified in its entirety by 11. Suitable journal bearings 12 carried by the frame 11 are a pair of laterally spaced horizontally disposed shafts 13. Imparting oscillatory movements to the shafts 13 in opposite directions is an electric motor 14 having a sheave 15 fast on its driveshaft 16, a flexible V-belt 17 entrained over the sheave 15 and over a second sheave 18. Sheave 18 is fast on one end of rotary shaft 19, which has opposite end portions journalled in the frame member 11. Fast on the intermediate portion of the shaft 19 are a pair of axially spaced eccentrics 20 upon which are journalled connecting rods 21, one each connected at its free end to a crank arm 21a which are each fast on one of the shafts 13.

Mounted fast on a common end of each of the shafts 13 for common oscillatory movements therewith, are identical shaker frames, each identified in their entirety by 22, and each including a pair of laterally spaced generally upright guide-legs 23, and a generally horizontally disposed crosshead 24 which connect the intermediate portions of their respective guide-legs 23 and divide same into upper and lower guide-leg elements 23a, 23b, respectively. Mounted and guided for generally vertical adjustments on each pair of upper guide-leg elements 23a is a generally horizontally disposed upper clamping plate 25, each of which, for purposes of adjustment, is provided with a handle 26. For locking the upper clamping plates 25 in desired adjusted positions, to compensate for paint cans of varying heights, the handles 26 are centrally pivoted as at 27 for swinging movements of their opposite ends 28 into and out of opposed vertically spaced notches 29 on the upper guide-leg elements 23a.

Yielding but adjustably limiting downward movements of the lower clamping plates 30 on their respective lower guide-leg elements 23b are coil compression springs 31 received over the lower end portions of vertically disposed screw-threaded studs 32, and interposed between the lower clamping plates 30 and washer-equipped nuts 33. The upper end portions of each of the studs 31 project upwardly loosely through apertures 34 in the rear end portions of the clamping plates 30, and have their upper ends 35 securely anchored to the intermediate portion of the overlying crosshead 24. Limiting upward movements of the respective lower clamping plates 30 and the yielding bias of the coil springs 31 are adjustable stop nuts 36.

Suitably journalled in frame 11 on a horizontal axis by means of suitable bearing bosses 37 is a rockshaft 38. As shown, rockshaft 38 is positioned rearwardly of the shaker frames 22 and below the plane of the shafts 13. Rigidly secured to the intermediate portion of the rockshaft 38 for swinging movements in a vertical plane intermediate the shaker frames 22, from a generally upright position to a forwardly and downwardly disposed generally horizontal position, is an elongated operating lever 39.

Rigidly secured to and projecting radially outwardly from the rockshaft 38, one each on opposite sides of the operating lever 39, are cam-acting dogs 40 which are adapted to simultaneously overlie and engage the rear end portion of one of said lower clamping plates 30, upon forward and downward swinging movements of the operating lever 39. In this manner the lower clamping plates 30 are depressed against the bias of the coil compression springs 31 so as to facilitate insertion of paint can X to be mixed between the plates 25, 30.

To retain the operating lever 39 in either the dotted or full-line positions of FIG. 3, or any position therebetween, the radially outer limits of the bearing 37 are formed to define a plurality of circumferentially spaced recesses 41, into selective reception of which the extended end 42 of a locking pin 43 is yieldingly biased through the medium of a coil compression spring 44. Adjacent its outer end 39a, the lever 39 is provided with a hand-grip handle 45 for withdrawing the lower end 42 of the locking pin 43 from a given one of the recesses 41 against the yielding bias of the spring 44.
3 After depression of the lower clamping plates 30 in the manner above indicated and placing thereupon a paint can X of a given height, the upper clamping plates 25 are moved upwardly into engagement with the upper limits of the cans X and locked into such position by rotating the handle 26 in a manner to cause the free ends 28 to enter selected ones of opposed notches 29. Thereafter, the operating lever 39 is moved to the full-line position of FIG. 5, and the cans X are securely clamped between the upper and lower clamping plates 25, 30 by means of the yielding bins exerted by the springs 31 on the lower plate 30. If the clamping tension exerted by said springs 31 against the lower clamping plates 30 is inadequate for one reason or another, this tension may obviously be increased by adjustment of the washer-equipped nuts 33.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects; and while I have disclosed a preferred embodiment thereof, same may well be capable of modification without departure from the scope and spirit of the appended claims.

What is claimed is:

1. In a device of the class described,
   (a) a base,
   (b) a frame structure carried by said base,
   (c) a horizontally disposed shaft journalled in said frame structure,
   (d) means for imparting oscillatory movements to said shaft,
   (e) a shaker frame fast on one end of said shaft, said shaker frame including
      (1) a pair of laterally spaced generally upright guide-legs, one on each side of said shaft, and
      (2) a crosshead connecting the intermediate portions of said guide-legs and dividing same into upper and lower guide-leg elements,
   (f) a generally horizontally disposed upper clamping plate mounted and guided for generally vertical adjustments on said upper guide-leg elements,
   (g) means for locking said upper clamping plate in desired adjusted positions on said upper guide-leg elements,
   (h) a lower clamping plate slidably mounted on said lower guide-leg elements in planes parallel to said upper clamping plate,
   (i) yielding means limiting downward movements of said lower clamping plate on said lower guide-leg elements,
   (j) a horizontally disposed rockshaft journalled in said frame on an axis generally normal to the axes of said first mentioned shafts and below the plane of said first mentioned shafts,
   (k) a radially projecting operating lever fast on said rockshaft for swinging movements in a vertical plane intermediate said shaker frames,
   (l) a pair of cam-acting dogs on said rockshaft one each axially spaced from said operating lever in opposite directions and one each adapted to overlie and engage one of said lower clamping plates upon downward swinging movements of said operating lever, whereby to simultaneously depress said lower clamping plates against the bias of its respective yielding means,
   (m) means for releasably locking said operating lever in said downwardly swung position, and
   (n) means for releasably locking said operating lever in generally upright position wherein each of said cam-acting dogs is out of engagement with its respective lower clamping plate.

2. In a device of the class described,
   (a) frame structure,
   (b) a shaft journalled in the frame structure,
   (c) means for imparting oscillatory movements to said shaft,
   (d) a pair of clamping plates carried by said shaft,
   (e) one of said plates being mounted and guided for limited movements towards and away from the other of said plates,
   (f) means yieldingly biasing one of said plates toward said other plate,
   (g) means for moving said one clamping plate away from said other clamping plate against the bias of said yielding means,
   (h) means for mounting and guiding said other of said plates toward and away from said one plate, and
   (i) means for locking said other of said plates in selected positions of said guided movement.

3. In a device of the class described,
   (a) a base,
   (b) a frame structure carried by said base,
   (c) a pair of laterally spaced generally parallel horizontally disposed shafts journalled in said frame structure,
   (d) means for imparting simultaneous oscillatory movements to said shafts in opposite directions,
   (e) a pair of shaker frames each one fast on a common end of one of said shafts and each thereof including
      (1) a pair of laterally spaced generally upright guide-legs, one each on an opposite side of its respective shaft, and
      (2) a crosshead connecting the intermediate portions of said guide-legs and dividing same into upper and lower guide-leg elements,
   (f) a generally horizontally disposed upper clamping plate mounted and guided for generally vertical adjustments on each pair of said upper guide-leg elements,
   (g) means for locking each of said upper clamping plates in desired adjusted positions on their respective upper guide-leg elements,
   (h) a lower clamping plate slidably mounted on each pair of said lower guide-leg elements in planes parallel to their respective upper clamping plates,
   (i) yielding means limiting downward movements of each of said lower clamping plates on their respective lower guide-leg elements,
   (j) a horizontally disposed rockshaft journalled in said frame on an axis generally normal to the axes of said first mentioned shafts and below the plane of said first mentioned shafts,
   (k) a radially projecting operating lever fast on said rockshaft for swinging movements in a vertical plane intermediate said shaker frames,
   (l) a pair of cam-acting dogs on said rockshaft one each axially spaced from said operating lever in opposite directions and one each adapted to overlie and engage one of said lower clamping plates upon downward swinging movements of said operating lever, whereby to simultaneously depress said lower clamping plates against the bias of its respective yielding means,
   (m) means for releasably locking said operating lever in said downwardly swung position, and
   (n) means for releasably locking said operating lever in generally upright position wherein each of said cam-acting dogs is out of engagement with its respective lower clamping plate.

4. In a device of the class described,
   (a) a base,
limited movements towards and away from the other of said plates,
(f) means yieldingly biasing one of said plates toward said other plate,
(g) means for moving said one clamping plate away from said other clamping plate against the bias of said yielding means, and
(h) adjustable stop means for varying the limit of movement of said one plate in the direction of said other plate.

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