June 1, 1948. M. C. BOSS 2,442,675

APPARATUS FOR CLEANING METAL ARTICLES AND THE LIKE BY LIQUID DIP AGITATION

Filed Nov. 3, 1945

FIG. 1.

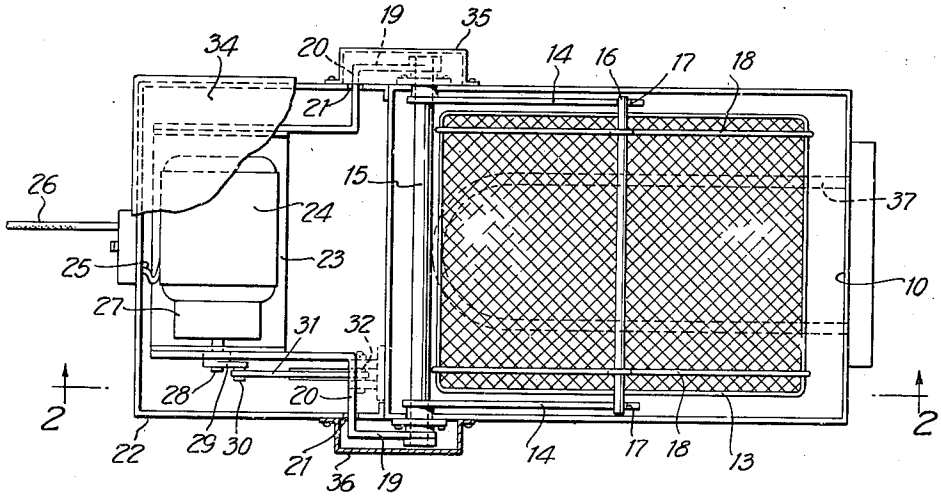


FIG. 2.

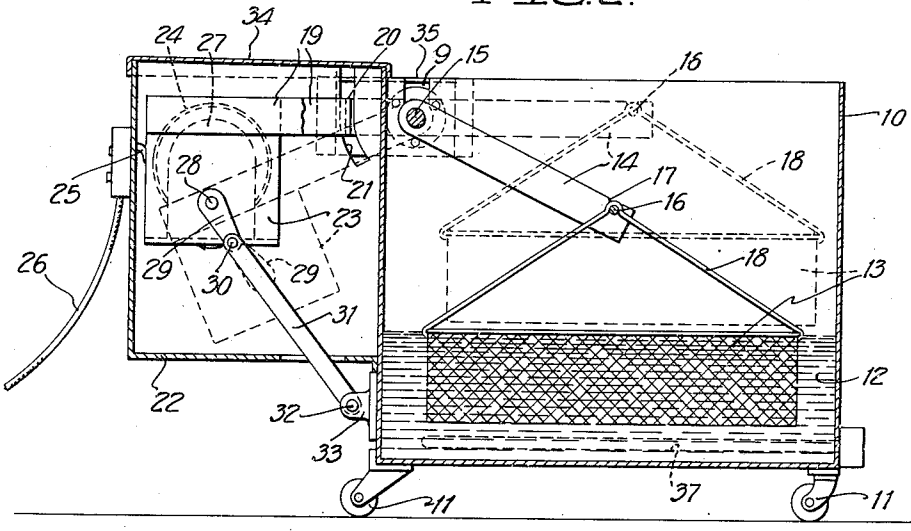
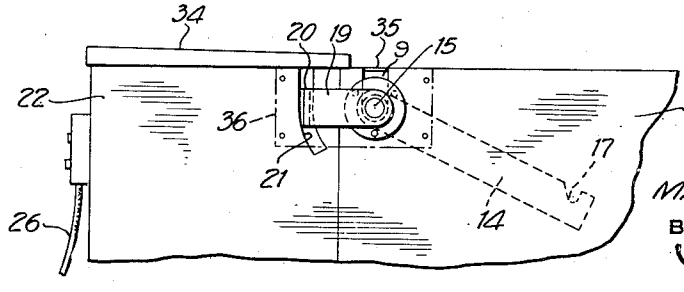


FIG. 3.



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APPARATUS FOR CLEANING METAL ARTICLES AND THE LIKE BY LIQUID DIP AGITATION

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1 Claim. (Cl. 134—140)

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This invention relates to apparatus for cleaning metal articles and parts by dipping them in cleaning liquids. As such apparatus is usually operated, the articles are placed in baskets or analogous containers which are repeatedly lowered and raised in the cleaning liquid tank to agitate the liquid and expose the surfaces of the articles or parts to a thorough and complete contact with the liquid, after which the baskets or the like are removed and emptied. The cycle may include successive dipping operations in cleaning liquids, followed by successive dipping operations in rinsing liquids.

An object of my present invention is to enable the dipping operation to be performed with less expenditure of mechanical effort. In general, I accomplish this object by approximately counterbalancing the weight of the load being handled. According to my invention, the load is at least in part counterbalanced by a lever connection from the load and the motor by which the load is being lifted, whereby the operating motor is always relieved from the duty of lifting the dead weight of the load.

In the accompanying drawing—

Figure 1 is a plan view of a dip-agitating machine in which the load is at least in part counterbalanced by the weight of the motor.

Figure 2 is a vertical section of the same on the line 2—2 of Figure 1, and Figure 3 is a fragmentary side elevation of a part of the lever connections between the load and the actuating motor.

Referring to Figures 1, 2 and 3, the cleaning tank 10 is mounted on casters 11 and contains a body of cleaning liquid or rinsing liquid 12 into which a basket 13, hung on rock arms 14, is dipped. The rock arms 14 are preferably two in number and are firmly secured in spaced-apart relation on the rock shaft 15. A transverse rod or bar 16 is laid across their free ends in suitable notches or recesses 17 to carry the bails 18 of the basket 13. The rock shaft 15 is journalled in recesses 9, 9 in the side walls of the tank 10 through which the rock shaft extends to receive a second pair of lever arms 19 which are fixedly secured on the rock shaft so as to remain in fixed angular relation to the pair of rock arms 14. This pair of lever arms 19 are inwardly offset or bent at 20 to pass through their clearance apertures 21 in the side walls of a motor casing 22 which may be fixed on the adjoining wall of the tank 10, as clearly shown in Figures 1 and 2. These lever arms 19 are bent rearwardly from their offset portions 20 to be rigidly connected with a U-shaped cradle strap or plate 23 on which

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an electric motor 24 is securely mounted. The motor is thus supported by the lever arms 19. Electrical connections are made to the motor through flexible conductors 25 from the power line 26.

The electric motor 24 operates, through any approved speed reduction gearing 27, a crank shaft 28 which extends through an aperture in the cradle plate 23, and has firmly fixed thereon the crank arm 29 which is pivotally connected at 30 with the end of a link 31 which passes through an aperture in the bottom of the motor casing 22 and is pivotally anchored at 32 in a bracket or lug 33 fixed to the wall of tank 10. The motor casing 22 may be covered with a drain board 34 to protect the parts enclosed therein. Protecting covers 35 and 36 may similarly be applied over the projecting ends of the rock shaft 15 to enclose the journals and lever arm connections.

A heating coil 37 may be employed in the bottom of tank 10.

The construction described places the load in tank 10 in counterbalanced relation with the motor and its connected parts in the motor casing 22. Operation of the motor will cause the crank arm 29 to rotate at a suitably low R. P. M. as determined by the speed reduction gearing 27. Since this crank arm is pivotally anchored through the link 31 to the fixed point 32, the motor and its supporting members will oscillate about the center of rock shaft 15 and thereby oscillate the load-supporting rock arms 14 to slowly raise and lower the basket 13. It will, of course, be understood that the basket 13 contains the parts to be cleaned, and is introduced into and removed from the tank 10 by any approved hoisting device.

It will be understood that various changes may be made in the form, construction, material and arrangement of the apparatus without departing from the spirit or scope of my invention and hence I do not intend to be limited to details herein shown or described except as they are recited in the claim.

I claim:

Cleaning apparatus of the character described, comprising in combination a tank providing a reservoir for cleaning liquid, a rock shaft journalled thereon, a rock arm fixed on said rock shaft to oscillate over the liquid reservoir in said tank, a dipping basket supported on said rock arm for carrying the pieces to be cleaned into and out of the liquid in said reservoir, a rock shaft actuating lever fixed on said rock shaft, a motor supported at least in part by said actuating lever in counterbalancing relation to the load lifted by

said oscillating rock arm, a crank arm rotated by said motor, and a link pivotally connected to a fixed point and to the free end of said crank arm to cause said motor and its supporting rock shaft actuating lever to oscillate as the motor rotates.

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