Oct. 7, 1924. 1,510,504

G. W. SCHWEINSBERG ET AL

APPARATUS FOR CLEANING ARTICLES

Filed July 16, 1919

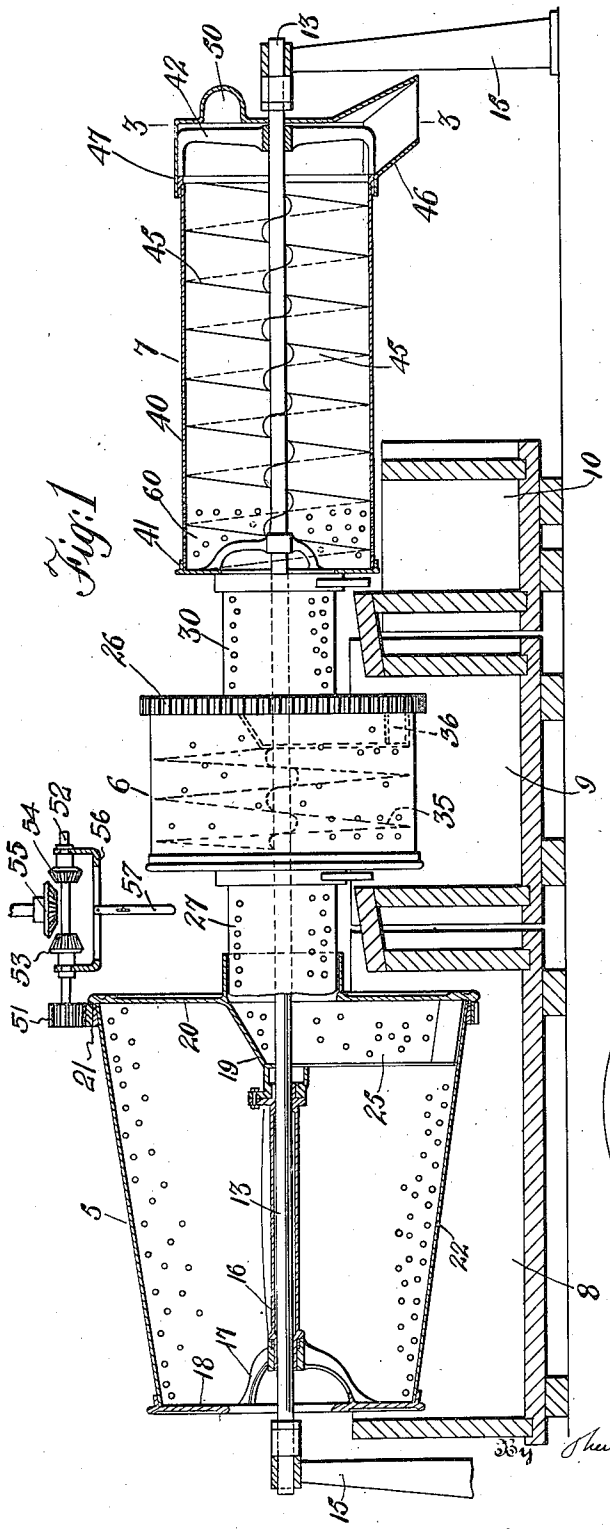


Fig. 1

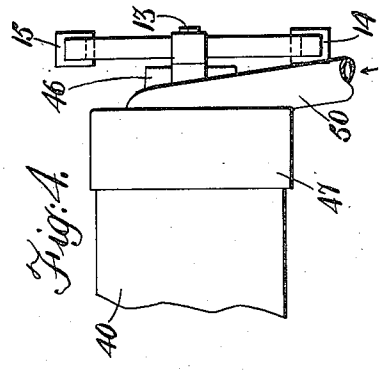


Fig. 4.

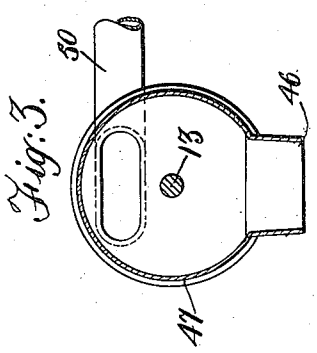


Fig. 3.

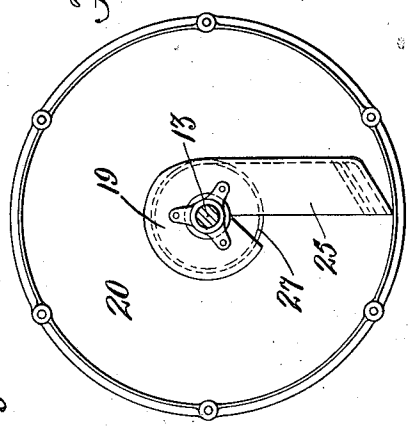


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE W. SCHWEINSBERG AND MASON I. DOYLE, OF BROOKLYN, NEW YORK, ASSIGNORS TO U. S. ELECTROGALVANIZING COMPANY, A CORPORATION OF WEST VIRGINIA.

APPARATUS FOR CLEANING ARTICLES.

Application filed July 16, 1919. Serial No. 311,156.

To all whom it may concern:

Be it known that we, GEORGE W. SCHWEINSBERG and MASON I. DOYLE, citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Cleaning Articles, of which the following is a specification.

This invention relates to apparatus for subjecting articles to the action of fluids and the object of the invention is to provide rotary drum containers such that the relative times of treatment in successive fluids may be varied and the cleaning or other action suited to the material. A further object of the invention is to provide drying means for thoroughly drying the articles by an air blast directed through a container adapted to be rotatably connected to the drum containers.

In the accompanying drawings,

Fig. 1 is a side elevation with parts in section of apparatus embodying this invention;

Fig. 2 is an elevation of a detail of Fig. 1;

Fig. 3 is a transverse section on line 3—3 of Fig. 1, and

Fig. 4 is a plan view of the discharge end of the machine.

The material, such as bolts, nuts, washers or other small articles, to be treated is passed successively through the drums 5, 6 and 7 which for purposes of illustration may be considered as corresponding respectively to cleaning, washing and drying steps.

The tank 8 contains cleaning fluid in contact with the material while in drum 5, and the tank 9 contains wash water for the material in drum 6, while tank 10 receives the draining drip from the end of the drying drum 7.

All of the drums are disposed along a shaft 13 carried by bearings supported by legs 14 and 15 and the shaft is rotated by gear 26 on one head of the drum 6. This drum 6 and the drying drum 7 are rigid with the shaft and rotate with it but the cleaning drum 5 is rotatable on the shaft so that it may be rotated in an opposite direction.

The drum 5 comprises a sleeve 16 rotatable on shaft 13 and having attached to it drum heads 18 and 20 by spokes 17 and cone 19 respectively. The head 20 is larger in diameter than the head 18 and the periphery 22 of the drum expands toward its rear end so that articles fed in through the opening in head 18 will move downward toward the head 20. The head 20 is provided with the scoop 19 having a blade 25 adapted to pick up the articles, as the drum is rotated in a clockwise direction (Fig. 2), and feed them into the transfer cylinder 27. When the drum 5 is rotated in the opposite counter clockwise direction (Fig. 2) the articles are not picked up but remain in the cleaning fluid until the direction of rotation of the drum is changed to discharge them. The gear drive 21 is driven by a pinion 51 on shaft 52 carrying bevel gears 53 and 54 slidingly keyed to said shaft, one or the other of said gears being adapted to engage the bevel gear driver 55 to drive the pinion 51 and gear 21 in opposite directions according as the yoke 56 is moved to the left or right by a handle 57.

By means of the separate drive 21 for this drum 5 therefore the articles may be kept in the cleaning fluid as long as desired and then by reversing the rotation of the drum 5 the articles will be fed on into the transfer cylinder 27 and succeeding drums which rotate with the shaft 13. The transfer cylinders 27 and 30 and drums 6 and 7 are provided with internal spiral fins 35 and 45 respectively which feed the material to the right and the drum 6 has a pick-up scoop 36 similar to that of drum 5 so that the articles received from the latter are continuously fed through the washing and drying apparatus and out of the machine. And while the articles are being carried through these drums 6 and 7 a fresh lot is fed into drum 5 and its direction of rotation reversed to retain the new lot in the cleaning fluid the desired length of time.

The drying drum 7 comprises a peripheral cylinder 40 supported between head 41 at one end and the offset spider 42 at the other. Within the drum is the deep spiral fin 45 closely surrounding the shaft 13 and the discharge end the drum fits into a stationary cap piece 47 provided with the outlet 46 for the articles and the inlet 50 for hot-air from a blower. The inlet 50 is directed at an angle to the cap 47 such that the air blast follows back around and around through the spiral formed by the fin 45 and finally escapes through the perforations 60 at the

entrance end of the drum. As the air thus passes back through the drying drum it takes up moisture from the articles and the surrounding walls so that the articles meet progressively dryer air toward the discharge end. The articles progress in one direction and the drying air in the opposite direction.

In case one lot of articles are delivered before the next lot are ready for discharge from the cleaning drum 5, the air blast will of course be shut off awaiting the next lot and the rotation of shaft 13 may itself be stopped. The machine is adjustable to a wide variety of work and is economical in operation.

We claim:—

1. In apparatus for treating articles in a series of liquids the combination of a plurality of separately rotatable drums arranged end to end and adapted to dip the articles into said liquids in succession and to automatically pass the articles from the end of one drum into the end of the next drum, at least one of said drums being adapted to move the articles when rotated in one direction and to discharge them when rotated in the opposite direction.

2. Apparatus for treating articles in a liquid comprising a rotatable drum, means for driving said drum in opposite directions, and axial discharge means carried by said drum retaining the material therein when rotated in one direction and discharging it when rotated in the opposite direction.

3. Apparatus for treating articles in a liquid comprising a rotatable drum having an inclined periphery dipping into the liquid and means for driving said drum in opposite directions and discharge means adapted to lift the articles out from the lower end of said incline when driven in one direction and retaining said material in said drum when rotated in the opposite direction.

4. In apparatus for treating articles in a series of liquids, the combination of a plurality of rotatable drums mounted on a common shaft and having transferring means between each drum and the next succeeding drum to automatically pass the articles from one drum to the other, and means permitting at least one of said drums to be independently driven so that the treatment of the articles in said drum may be separately regulated.

5. The combination with a plurality of coaxial drums adapted to dip material into a series of liquids and having means for automatically transferring the material from one drum to the other by the rotation of said drums, of final means for removing the liquid from the material comprising an end drum rotating with certain of the other drums, and means for forcing a blast of air in a direction opposite to the direction of progress of the material through said end drum.

6. In apparatus for treating material the combination with a plurality of tanks, of a plurality of drums adapted to dip the material into a liquid in said tanks, and transfer means for passing the material from one drum to the other comprising means rotatable in a direction opposite to the rotation of one of said drums.

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