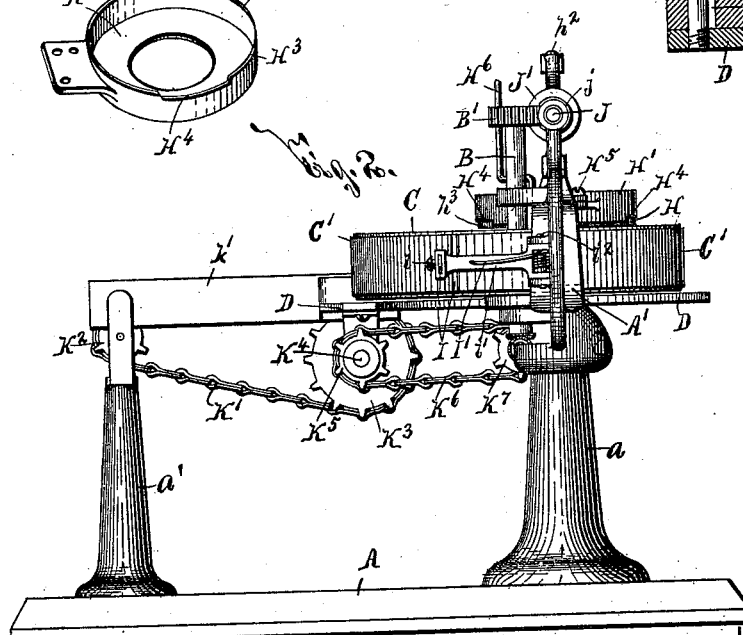
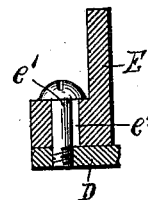
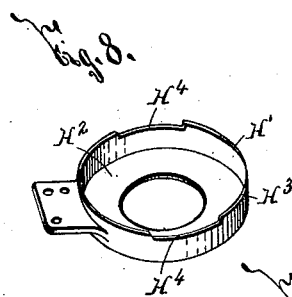
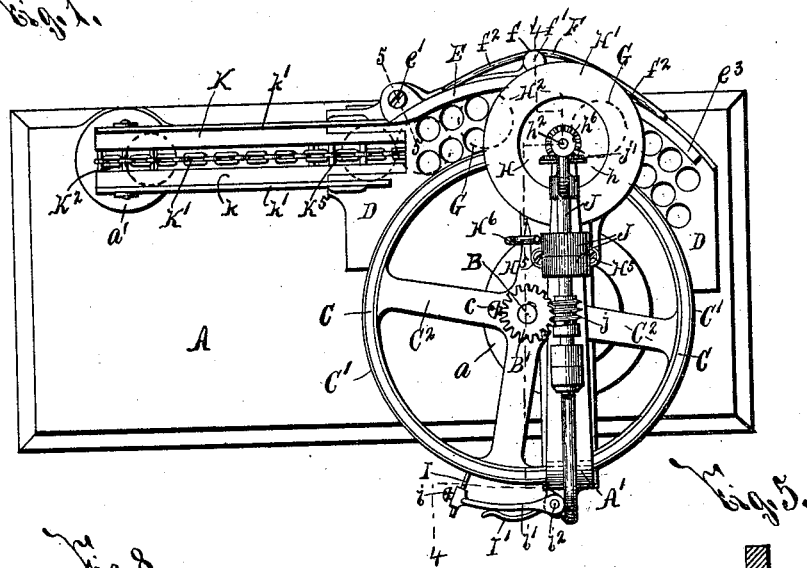


J. R. ROWLANDS.  
CAN CLEANING MACHINE.

No. 523,713.

Patented July 31, 1894.



WITNESSES:

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M. D. Lewis,

INVENTOR

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ATTORNEYS.

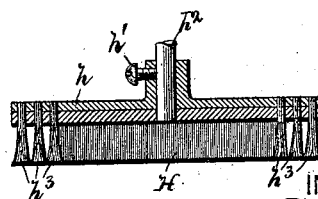
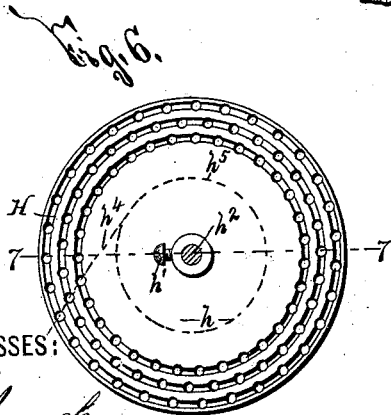
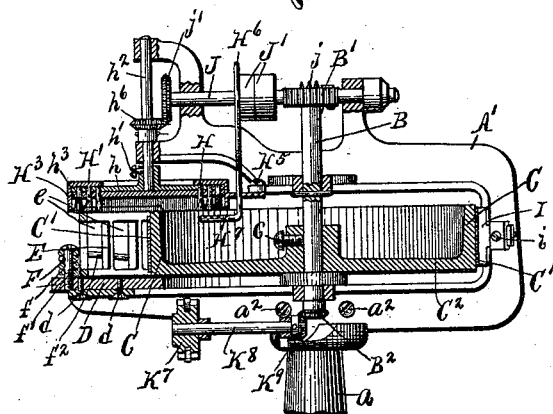
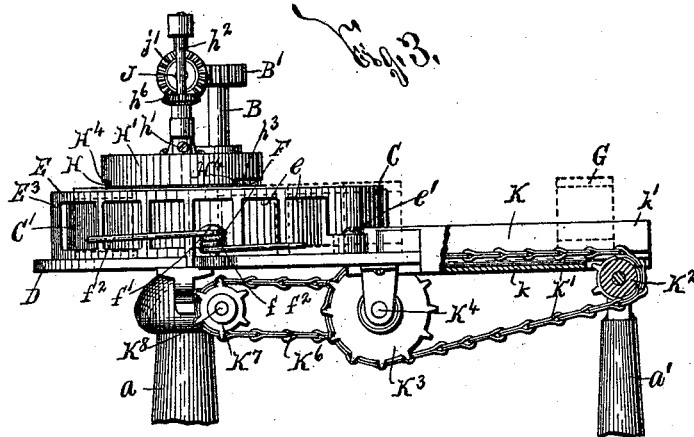
(No Model.)

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# UNITED STATES PATENT OFFICE.

JOHN R. ROWLANDS, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF  
TO WARREN H. BOLES, OF SAME PLACE.

## CAN-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,713, dated July 31, 1894.

Application filed November 23, 1893. Serial No. 491,738. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. ROWLANDS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Can-Cleaning Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in can cleaning machines of the class particularly designed to clean the tops of filled unsealed cans, and has for its object the production of a simple and practical device, which is manufactured at a minimum cost, receives the cans from a source of supply as a filling machine, effectively cleans the tops of the cans, is durable in use, and is easily and quickly cleaned for the purpose of permitting its practical re-use and continued use; and to this end it consists, essentially, in a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a feed for feeding the cans through the former guide-way, a feed for feeding the cans through the latter guide-way, and actuating mechanism connected to said feeds for conjointly operating the same.

The invention also consists in a revoluble feeding wheel having a peripheral engaging face, a continuous yielding guide arranged opposite to the wheel and having both extremities movable toward and away from the same, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figures 1 and 2 are, respectively, top plan and front elevation of my improved can cleaning machine, illustrating the general construction and arrangement of its component parts. Fig. 3 is a rear elevation of the parts as shown at Figs. 1 and 2, a portion of one of the guide-ways being broken away for more clearly indicating the feed for feeding the cans through said guide-way. Fig. 4 is a transverse vertical sectional view, taken on

line 4—4, Fig. 1. Fig. 5 is a detail sectional view, taken on line 5—5, Fig. 1. Fig. 6 is a top plan view of the cleaning brush of my machine. Fig. 7 is a vertical sectional view, taken on line 7—7, Fig. 5, and Fig. 8 is an inverted isometric perspective of the cap for the cleaning brush.

It is well known to those skilled in the art that it is extremely desirable in can cleaning machines of the class designed for operating upon the tops of filled uncapped cans, to impart a rolling movement to the cans when passing beneath the cleaning brush in order that its operation may be highly effective and the wear on its face rendered uniform, and it is equally well known that machines of this class must be so constructed as to render the same capable of rapid and thorough cleaning since the material accumulated thereon during their operation becomes sour after a short lapse of time, and is extremely liable to enter the open tops of the cans and cause fermentation of their contents.

Various machines have been devised for rolling the cans when passing beneath the cleaning brush, and these machines have usually been provided with a flexible feeding belt passing over rollers for imparting the desired rolling movement to the cans. The cans rolling against the belt when passing around the rollers, soon unduly stretch the belts and even though an oppositely arranged pressure plate or guide is used in connection with the belts, the fluency and effectiveness of the feed of the cans is materially decreased. Moreover, the feeding belts become more or less glazed with the material discharged from the tops of the cans by the action of the feeding brush, and their frictional power is thus greatly decreased. In other constructions of such machines for imparting a rolling movement to the cans a revoluble feeding wheel having a frictional engaging face has been used in connection with an oppositely arranged guide consisting of a number of independently moving sections having their adjacent ends hinged to reciprocally moving spring actuated plungers arranged radially with the feeding wheel, and in this class of machines the feed is materially impaired and rendered more or less inefficient by the variable action and resili-

iciency of the separate springs for effecting the independent movement of the sections of the guide, by the hinged movement of the separable sections, and by the liability of the plungers to bind in their supports. Moreover, this construction of can cleaning machines is extremely expensive in manufacture, is noisy in action, owing to the hinged movement of the sections of the guide, and requires a considerable number of separable component parts.

My invention is cheaply manufactured, is comparatively quiet in action, consists of a minimum number of parts, imparts a rolling movement to the cans when passing beneath the cleaning brush and is quickly cleaned.

A represents a base, which may be of any desirable form, size, and construction, and may consist of a supporting floor, and  $a$ ,  $a'$ , standards projecting upwardly from the base. Secured by suitable fastening means  $a^2$  to the upper part of the standard  $a$  is a U shaped bracket  $A'$  provided with a vertical shaft  $B$  carrying the revoluble feeding wheel  $C$ , which is secured thereto by suitable fastening means  $c$ . The feeding wheel  $C$  is formed with an upright frictional engaging face  $C'$ , and is provided with a perforated web  $C^2$ , Fig. 1. Mounted upon one end of one of the arms of the U shaped bracket  $A'$ , and secured thereto by suitable fastening means  $d$  is the perforated base  $D$  of the guide-way through which the cans are forced by the revoluble wheel  $C$ .

At one edge of the base  $D$ , and oppositely arranged to the wheel  $C$  is a yielding guide  $E$ , which is formed concentric with the wheel  $C$ , and is provided with a series of perforations  $e$ . The extremity of the guide  $E$  at the inlet end of the guide-way of which said guide is a part, is turned outwardly from the wheel  $C$  and is provided with a rearwardly extending ear mounted upon a pivot  $e'$  secured to the support or base  $D$ , and, as clearly shown at Fig. 5, the pivot opening  $e^2$  in said extremity of the guide is formed of greater diameter than the portion of the pivot  $e'$  arranged within said opening for permitting this extremity of the guide to move toward and away from the feeding wheel. As the guide  $E$  is rocked on its pivot  $e'$  the free extremity  $e^3$  of the guide is also moved toward and away from the feeding wheel  $C$ .

$F$  is a suitable spring for holding the guide  $E$  in its normal position and causing the same to firmly press the interposed cans  $G$ , shown by dotted lines at Fig. 1, against the adjacent portion of the feeding face of the wheel  $C$  for increasing the feeding power of said wheel. The spring  $F$  is preferably formed with a coiled central portion  $f$  mounted on a support  $f'$  arranged at the rear of the central portion of the guide  $E$ , and is provided with projecting extremities or arms  $f^2$  bearing against the opposite ends of the guide  $E$ . The spring  $F$  thus becomes an automatic adjusting device for forcing the guide  $E$  to its normal position, but it is evident that other

constructions of springs or a weighted lever may be substituted therefor if desired. This peculiar construction of guide  $E$  and spring  $F$  is particularly simple and effective, since the guide and spring are each composed of a single part, and since both extremities of the guide are free to move toward and away from the feeding wheel, and are held in their operative positions by the opposite arms of the spring  $F$ , which permit the opposite extremities of the guide  $E$  to move independently toward and away from the feeding wheel to accommodate the guide-way to slight variations in the diameter of the cans, and to practically and effectively force the cans against the adjacent face of the feeding wheel for insuring its effective frictional engagement thereof.

$H$  is the cleaning brush, which is arranged above the central portion of the guide  $E$  and the adjacent portion of the feeding wheel  $C$  and preferably revolves on a substantially vertical axis. The brush  $H$  consists of a frame or disk  $h$  secured by a suitable fastening  $h'$  to a substantially upright shaft  $h^2$ , and concentric series of cleaning tufts  $h^3$  arranged alternately with each other, so that the corresponding tufts of each series are disposed in planes as  $h^4$  tangential with circles as  $h^5$ , Fig. 6, concentric with the axis of the brush. A brush of this construction is particularly effective in operation, and is readily cleaned.

$H'$  is a cap for incasing a portion of the brush  $H$  and restricting the escape by centrifugal force of the material accumulated upon the brush. This cap preferably consists of a horizontal portion  $H^2$  arranged above the brush and a depending flange  $H^3$  disposed at the outside of the upright periphery of the brush, and formed with cut-outs  $H^4$  in its lower edge aligned with the guide-way formed by the base  $D$ , the guide  $E$  and the adjacent portion of the wheel  $C$ , for permitting the passage of the cans within and from said cap. This cap  $H'$  is provided with a rearwardly extending arm secured by suitable fastenings  $H^5$  to the upper arm of the U shaped bracket  $A'$ .

Cleaning of the brush  $H$  is facilitated by an upright water conducting pipe  $H^6$  having a laterally extending extremity  $H^7$  discharging against the lower face of the brush.

In the operation of the cleaning brush more or less material cleaned from the tops of the cans is forced against the engaging face  $C'$  of the wheel  $C$ , and tends to impair its action. This material is removed from said face  $C'$  by a suitable scraper  $I$  of any desirable construction adjustably secured by a clamp  $i$  in the free end of an arm  $i'$  having its opposite end pivoted at  $i^2$  to the bracket  $A'$ . A spring  $I'$  is secured at one end to the pivotal pin  $i^2$  and its opposite end bears against the arm  $i'$  for forcing the scraper  $I$  against the face  $C'$  of the feeding wheel  $C$ .

$J$  is a horizontal shaft for connecting the feeding wheel shaft  $B$  and the cleaning wheel

shaft  $h^2$ , and, as preferably constructed, this shaft is provided at one end with a worm  $j$  meshing with a worm wheel  $B'$  upon the upper end of the shaft  $B$ , and is provided at its opposite end with a bevel pinion  $j'$  meshing with a bevel pinion  $h^3$  upon the shaft  $h^2$ . The shaft  $J$  is journaled in the upper arm of the U shaped bracket  $A'$ , and is provided with tight and loose pulleys  $J'$ , to which power is transmitted in any desired manner.

My invention is designed to be used in connection with a can filling machine, and is provided with a guide-way  $K$  for feeding the cans to the guide-way formed by the feeding wheel  $C$ , the support or base  $D$ , and the guide  $E$ . This guide  $K$  consists of a lower wall or base  $k$  disposed in substantially the same plane as the base or support  $D$ , and substantially parallel upright walls  $k'$   $k'$ .

Movable in the base of the guide  $K$  is a feed consisting of a flexible chain  $K'$  revolving over an idler  $K^2$  journaled in the standard  $a'$  and a driving wheel  $K^3$  preferably formed of less diameter than the feeding wheel  $C$ . The wheel  $K^3$  is mounted on a spindle  $K^4$ , and is rotated by a wheel  $K^5$  of less diameter, which is driven by a belt  $K^6$  movable over a driving wheel  $K^7$  of substantially the same diameter as the wheel  $K^5$ . A supplemental shaft  $K^8$  is journaled in the upper end of the standard  $a$ , and is provided at one end with the driving wheel  $K^7$  engaged with the belt  $K^6$ , and at the other end with a bevel pinion  $K^9$  meshing with a bevel pinion  $B^2$  upon the lower end of the shaft  $B$ .

The chain  $K'$  feeds the cans within the guide-way  $K$  into position to be engaged by the feeding wheel  $C$ , and the advanced can engaged by the chain  $K'$  forces the next adjacent can previously disengaged from the chain  $K'$  into engagement with the wheel  $C$ , and, as the wheel  $C$  revolves, the cans are fed along the guide  $E$  with a rolling movement. The cans then pass from the support or base  $D$  into a suitable receptacle or guide-way, not necessary to herein illustrate or describe, and are finally provided with caps for closing their open tops.

It will be evident upon reference to the foregoing description and an examination of the accompanying drawings that the feed consisting of the revoluble wheel  $C$  and the feed consisting of the flexible belt  $K'$  are operated conjointly by the mechanism previously described connecting the same, in order that the cans may be fed at a uniform rate of speed through the corresponding guide-ways through which said wheel and chain operate to feed the cans, and it will also be understood that the parts of my machine are extremely few; that owing to the perforated web of the wheel  $C$ , the perforated support or base  $D$  and the guide  $E$ , my improved machine may be readily cleaned by spraying water or other liquid thereupon; that the feeding wheel  $C$ , the guide  $E$ , and the spring  $F$  operate simply and effectively with a mini-

mum degree of noise to feed the cans with a rolling movement through the guide-way therefore with great fluency; and that said guide-way is, by the automatic adjustable movement of the continuous guide  $E$ , accommodated to variations in the diameters of the cans.

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings, and as it will be evident that the detail construction and arrangement of the parts of my invention may be somewhat varied, I do not herein limit myself to the exact detail construction and arrangement of said parts.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a feed for feeding the cans through the former guide-way, a feed for feeding the cans through the latter guide-way, and actuating mechanism connected to said feeds for conjointly operating the same, substantially as and for the purpose set forth.

2. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a feed for engaging the sides of the cans and feeding the same through the former guide-way, a second feed for engaging the bottoms of the cans, and feeding them through the second guide-way, and actuating mechanism connected to said feeds for conjointly operating the same, substantially as and for the purpose described.

3. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a revoluble feeding wheel for feeding the cans through the former guide-way, an endless feeding belt for feeding the cans through the latter guide-way, and actuating mechanism connected to said feeding wheel and feeding belt for conjointly operating the same, substantially as and for the purpose specified.

4. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a revoluble wheel having an upright face movable in the former guide-way for feeding the cans therethrough, a feed movable in the base of the latter guide-way for feeding the cans therethrough, and actuating mechanism connected to said revoluble wheel and said feed for conjointly operating the same, substantially as and for the purpose described.

5. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a revoluble wheel having an upright face movable in the former guide-way, an endless feeding belt having a portion

thereof movable in the latter guide-way for feeding the cans therethrough, a driving wheel for said belt, and power transmitting wheels of less diameter than said feeding and driving wheels connected together and to said feeding and driving wheels, substantially as and for the purpose specified.

6. In a can cleaning machine, the combination of a guide-way for the cans, a second guide-way for conducting the cans to the former guide-way, a feed for feeding the cans through the former guide-way provided with an actuating shaft having a worm wheel thereon, a worm for revolving said worm wheel, a pinion on the actuating shaft of said feed, a supplemental shaft provided at one end with a pinion connected to the pinion on the actuating shaft, a driving wheel on the supplemental shaft, a second feed for feeding the cans through the latter guide-way, an idler wheel for said second feed, a driving wheel for said second feed, and a wheel of less diameter than said driving wheel for the latter feed, connected to said driving wheel and connected to the driving wheel on the supplemental shaft, substantially as and for the purpose set forth.

7. In a can cleaning machine, the combination of a support for supporting the cans top uppermost, a feed for feeding the cans along said support, a movable guide arranged opposite to said feed and having one extremity pivoted, a coiled spring arranged between the two extremities of the guide and having opposite arms bearing against the opposite ends of the guide, substantially as and for the purpose described.

8. In a can cleaning machine, the combination of a substantially horizontal support for supporting the cans top uppermost, a feed for feeding the cans along said support, a guide arranged opposite to said feed and having one extremity pivoted and the other movable toward and away from the feed, a spring for forcing said guide to its normal position, and a cleaning brush revolving on a substantially vertical axis and having a substantially hori-

zontal lower engaging face, substantially as and for the purpose set forth.

9. In a can cleaning machine, the combination of a support for supporting the cans top uppermost, a feed for feeding the cans along said support, a guide arranged opposite to said feed and having one extremity pivoted and the other movable toward and away from the feed, a spring for forcing said guide to its normal position, a cleaning brush frame revolving on a substantially vertical axis, and a series of cleaning tufts arranged in a plane tangential with a circle concentric with said axis, substantially as and for the purpose described.

10. In a can cleaning machine, the combination of a support for supporting the cans top uppermost, a feed for feeding the cans along said support, a guide arranged opposite to said feed and having one extremity pivoted and the other movable toward and away from the feed, a spring for forcing said guide to its normal position, a cleaning brush revolving on a substantially vertical axis and having a substantially horizontal lower engaging face, and a driving shaft having one end connected to the feed and the other end connected to said brush, substantially as and for the purpose specified.

11. In a can cleaning machine, the combination of a guide-way for the cans, a revoluble feeding wheel having a peripheral engaging face for engaging the cans and feeding the same through said guide-way, and a yielding scraper bearing against the peripheral face of the feeding wheel for cleaning the same, substantially as set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 28th day of March, 1893.

JOHN R. ROWLANDS.

Witnesses:

CLARK H. NORTON,  
E. A. WEISBURG.