Dec. 14, 1954 H. D. LATHROP ET AL 2,696,822

CONVERTIBLE CAN AND CASE WASHER

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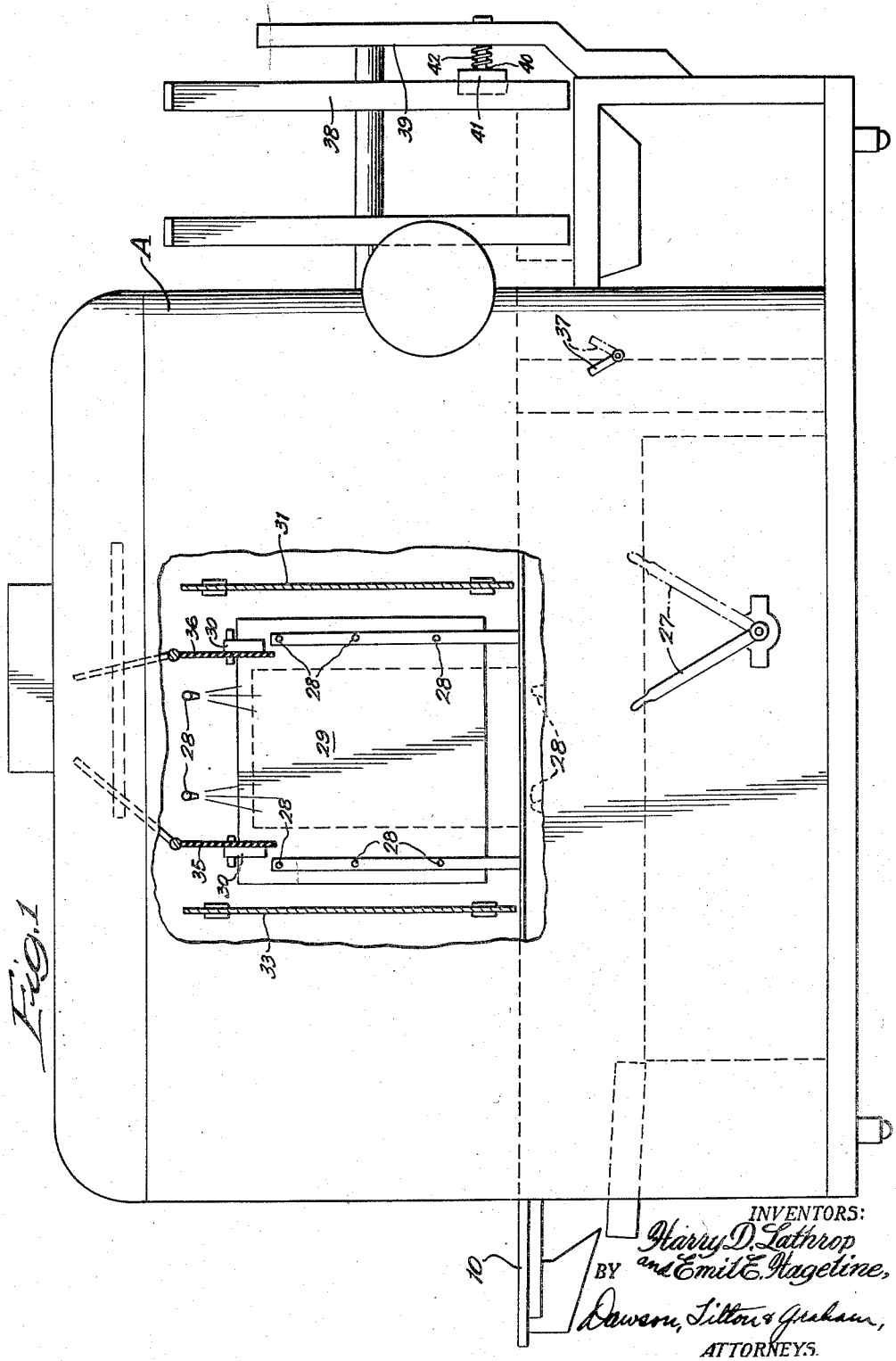


Fig. 1

INVENTORS:
Harry D. Lathrop
and Emil E. Hagetine,
BY
Dawson, Tilton & Graham,
ATTORNEYS.

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Fig. 2

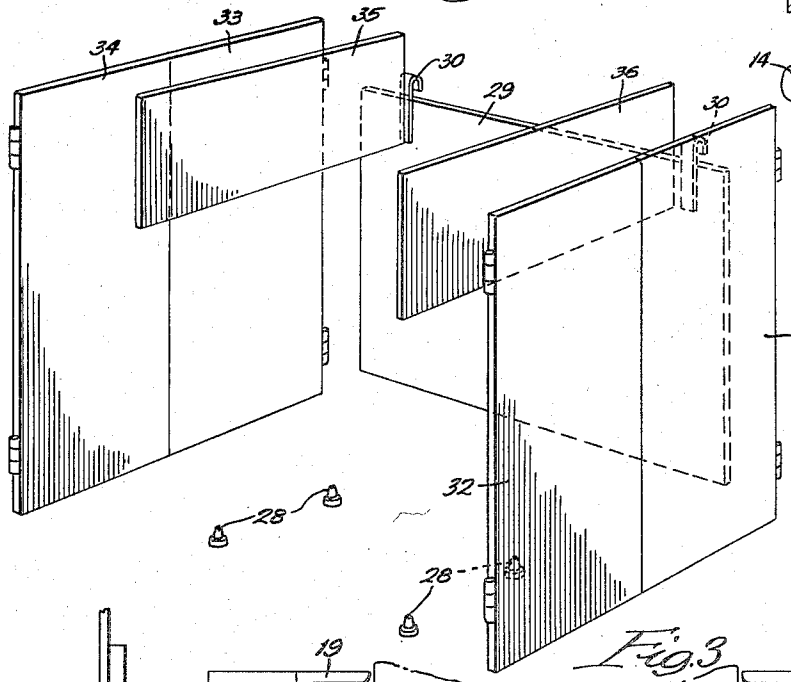


Fig. 5

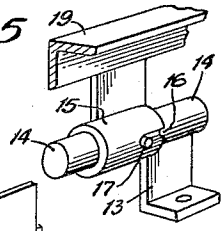


Fig. 3

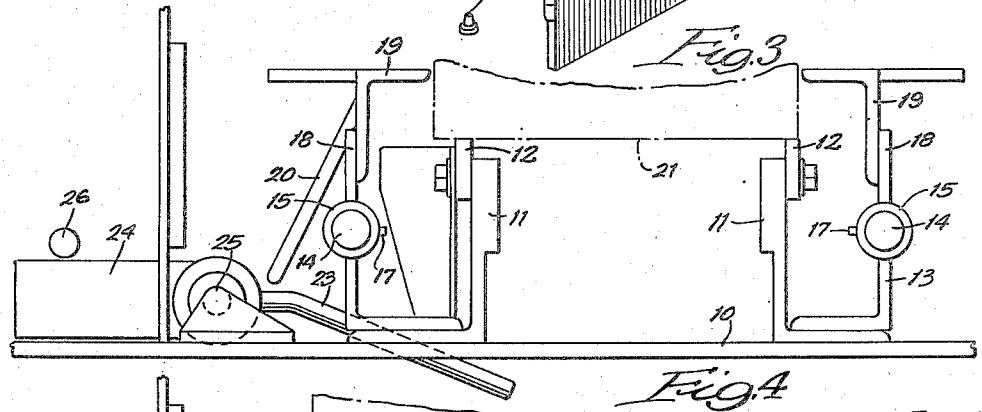
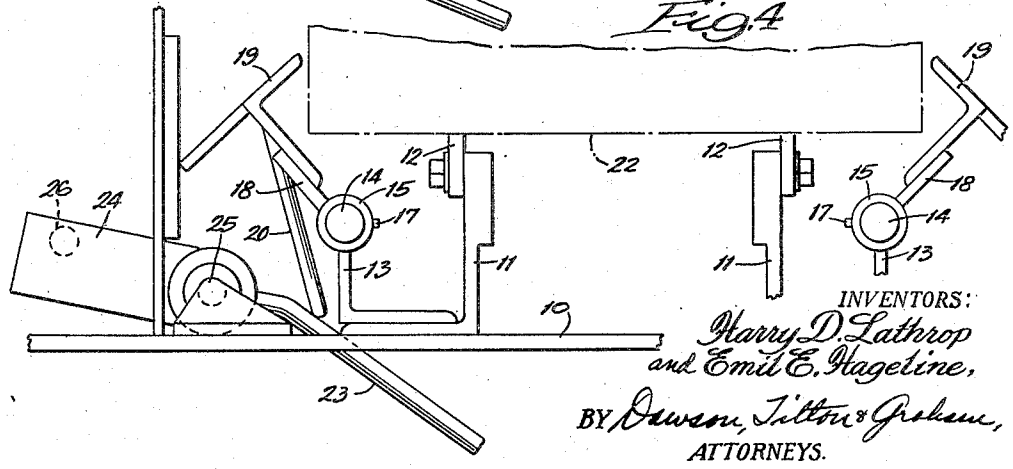


Fig. 4



INVENTORS:
Harry D. Lathrop
and Emil E. Hagetine,
BY Dawson, Tilton & Graham,
ATTORNEYS.

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CONVERTIBLE CAN AND CASE WASHER

Harry D. Lathrop and Emil E. Hageline, Chicago, Ill., assignors to The Lathrop-Paulson Company, Chicago, Ill., a corporation of Illinois

Application February 12, 1953, Serial No. 336,594

4 Claims. (Cl. 134—115)

This invention relates to a convertible can and case washer.

In the Harry D. Lathrop application, Serial No. 146,794, now Patent No. 2,645,400, there is described and shown a can-washing machine in which milk cans are passed in up-ended position, together with their covers, in stepwise relation, through the machine and subjected to washing operations therein. The cans and covers are treated at different stations as they progress through the machine, with acid cleaner solution, hot water, hot rinse water, and finally are air dried. If the same machine could be utilized for washing cases, a great saving could be accomplished. However, cases, being substantially rectangular in shape and being much wider than cans, have heretofore required an entirely separate machine to effect a washing thereof.

An object of the present invention is to provide apparatus which may be readily converted from a can-washing machine to a case-washing machine. A further object is to provide simple rail mechanism for supporting cans which may be converted into mechanism for supporting cases through a tilting movement of the rails. A still further object is to provide in such a mechanism means for automatically changing the valve operations, adapting them to the washing of cases when the rails are moved to an inclined position for receiving cases. Yet another object is to provide baffle means which may be readily installed, adapting the machine for the spray treatment of cases, etc., together with valve mechanism for directing the washing fluid to the case structure and for directing drying air toward a case for the drying of the case and in another direction for the drying of cans. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown, in an illustrative embodiment, by the accompanying drawing, in which—

Figure 1 is a side view in elevation of a machine embodying my invention, a portion of the machine being broken away to show a baffle structure therein; Fig. 2, a perspective view of the baffle structure within the machine; Fig. 3, a broken front view in elevation showing the rail structure arranged for support of cans upon the track; Fig. 4, a view similar to Fig. 3 but showing the rails swung laterally so as to receive cases upon the track; and Fig. 5, a perspective view of the pivot structure employed for the guide rails.

The apparatus consists broadly of a machine in which cans may be supported upon their open ends and which are moved forward by reciprocating rails equipped with dogs or pawls, as illustrated in Decker Patent No. 2,225,531 and provided with valve structure as shown in Hageline Patent 2,443,421. More specifically, the structure is shown in detail in the co-pending application of Harry D. Lathrop, Serial No. 146,794.

In the illustration given, A designates the casing of the machine providing a tunnel therein through which the cans or cases are moved.

Within the machine, there is provided a transverse support **10**, as shown more clearly in Fig. 3, upon which are mounted spaced supports **11** carrying the tracks **12**. The standards **13** provide a cylindrical member **14** received within a sleeve **15**, as shown more clearly in Fig. 5. The sleeve **15** is provided with a slot **16** adapted to receive a pin **17** with which the inner cylindrical bar **14** is provided. A strap **18** extends upwardly from the sleeve **15** and carries a guide rail **19**. The guide rail **19** on one side of the machine is provided with an obliquely extending or downwardly-inclined arm **20** adapted to actuate a valve structure which will be later described. The supporting bar **14** is carried on each side of the can or case track at each end of the machine and is fixed in position.

When the sleeve **15** has its slot **16** engaging or receiving the pin **17**, as illustrated in Fig. 5, the rail **19** is supported in vertical position and against lateral movement. However, when the sleeve **15** is drawn forwardly to disengage the pin **17** from the slot **16**, the rail **19** may then be rocked angularly on each side of the track to the position shown in Fig. 4. Thus, in the vertical position shown in Fig. 3, the rails **19** are adapted to receive therebetween cans which are indicated by the numeral **21**, while, when the rails are swung laterally to the position shown in Fig. 4, the rails are adapted to receive therebetween cases, which are indicated by the numeral **22**.

When the rails are in the vertical position shown in Fig. 3, the mechanism operates in the usual manner for the washing of the cans. Such mechanism has been described in said Hageline Patent No. 2,443,421. When, however, the apparatus is converted to a machine for washing cases and when the rails **19** are swung laterally to the position shown in Fig. 4, the downwardly-extending arm **20** engages the arm **23** which is fixed to an actuating member **24** pivotally mounted on shaft **25** so as to bring the member **24** into alignment with a reciprocating valve bar **26**. With this arrangement, the valves of the washing machine are maintained open. However, water does not flow through such can-cleaning valves because of a main switch arm **27** which is thrown to close the flow of water leading to the cans and to open the flow leading to the case-washing nozzles. Thus, when the rails are thrown to the position shown in Fig. 4 and the main lever **27** is moved to the position for washing cases, the flow of water to the can-washing nozzles is stopped and all of the water is directed to the case-washing nozzles.

The case-washing nozzles are illustrated in Figs. 1 and 2 and such nozzles are designated by the numerals **28**. It will be understood that any suitable nozzles and any arrangement thereof for washing the cases may be employed. In the illustration given, nozzles are shown mounted above the cases and on the sides thereof and below the cases for discharging water onto the cases. I prefer to mount a baffle **29** on a side of the machine opposite the side nozzles so as to stop the flow of liquid thereon against one side of the machine. The baffle **29** is preferably provided with a pair of hooks **30**, which may be readily hooked upon the side of the machine when it is converted to a case-washing machine.

Within the machine, I provide doors **31** and **32** at one side of the washing chamber and doors **33** and **34** at the other side of the washing chamber. I prefer to employ spring hinges which keeps the doors normally closed when a case is enclosed within the chamber. Also, if desired, rubber baffles **35** and **36** may be employed to center the spray from the top nozzles **28**.

The cover-advancing lever may be rendered inoperative by throwing a lever so that in the structure in which cases are being fed through the machine, the only reciprocating parts are the case-advancing dogs and the cradle operating mechanism.

Near the outlet end of the machine, I provide an air lever **37** controlling a simple valve allowing air to flow upwardly into a can for drying the can, when the machine is used for the treating of cans, and diverting air laterally against a case when the structure is used for drying a case.

At the outlet end of the structure is mounted a cradle **38** which rotates intermittently to move cans or cases laterally. A stop rail **39** is provided at the end of the machine and it supports a bar member **40**, in which is mounted a centering pad **41**. A spring **42** normally urges the pad **41** toward the case or can. The cradle moves the can or case laterally upon a discharge platform or conveyor (not shown).

Operation

In the operation of the machine, a can is normally fed to the forward end of the machine indicated at the left in Fig. 1, and the can **21** then feeds through the machine between the guide rails **19**, as shown more clearly in Fig. 3. The can is treated at various stations in the machine, as described more fully in Lathrop application, Serial No. 146,794, and is finally discharged by the cradle **38** to a point laterally of the machine. When it is desired to convert the machine into a case-washing machine, the operator draws the rails **19** forwardly, causing the sleeves **15** to leave the slots **16** and thus freeing the sleeves upon the fixed round supports **14**. The rails **19** may then be swung laterally to the position shown in Fig. 4. At the same time, the arm **20** of one rail engages the arm **23** and thus conditions the valve mechanism for the washing of cases. At the same time, the valve **27** is swung to case-washing position and the air lever **37** is similarly swung to a position for the air drying of cases. A case **22** is placed in position at the forward end of the machine, as illustrated in Fig. 4, and cases are successively moved through the apparatus, being washed within the chamber provided between the doors **31**, **32**, **33** and **34**. At the outlet of the machine, the case is dried by a blast of heated air and the case is discharged onto the cradle **38**, which then deposits it laterally of the machine. In the latter operation, the case presses against the pad **41**, causing the spring **42** to be compressed and then the pad **41**, under the influence of the compressed spring **42**, centers the case upon the cradle **38** so that it may be accurately moved to one side of the machine.

In the foregoing operations, it will be observed that the machine may be converted rapidly from a can-washing machine into a case-washing machine. The main change made is through the tilting of the guide bars **19**, which may be swung laterally to receive the cases **22** while simultaneously conditioning the valve mechanism for the treatment of cases. The tilting of the guide rails is accomplished by moving the rails or the supporting sleeves **15** thereof longitudinally of the bars **14** to engage or disengage the pins **17** on bars **14** from the slots **16** of sleeves **15**.

The foregoing modification is accomplished in a minimum of time, the can washer being converted into a case washer through the simple steps described, the hanging of the baffle **29** within the machine, the disconnecting of the cover carrier, the tilting of the rails **19** laterally, and the swinging of valve levers **27** and **37**.

While, in the foregoing specification, we have set forth a specific structure in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such details of structure may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. A convertible can and case washing machine, comprising tracks adapted to receive thereon cases and cans, valve mechanism controlling the flow of washing fluid, pivot supports for rails, and guide rails mounted upon said pivot supports and movable laterally away from can-supporting position to a position for receiving cases therebetween, said valve mechanism and at least one of said rails being provided with cooperating means for actuating said valve mechanism when said guide rails are moved laterally away from can-supporting position.

2. A convertible can and case washing machine, comprising tracks arranged to receive thereon cases and cans, means for washing cans, separate means for washing cases, valve mechanism for selectively controlling the flow through said can-washing means and said case-washing means, pivot supports for rails, and guide rails mounted upon said pivot supports and movable laterally away from can-supporting position to a position for receiving cases therebetween, at least one of said rails being provided with a member for actuating said valve mechanism when said rail is moved into one of said positions.

3. A convertible can and case washing machine, comprising tracks adapted to receive thereon cases and cans, valve mechanism controlling the flow of washing fluid, pivot supports for rails, and guide rails mounted upon said pivot supports and movable laterally away from can-supporting position to a position for receiving cases therebetween, at least one of said rails being provided with an arm for actuating said valve mechanism to condition the same for the washing of cases.

4. The structure of claim 3, in which the pivot supports comprise cylindrical bars receiving sleeves secured to said rails, said sleeves and bars being provided with interlocking slots and pins.

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