

July 24, 1928.

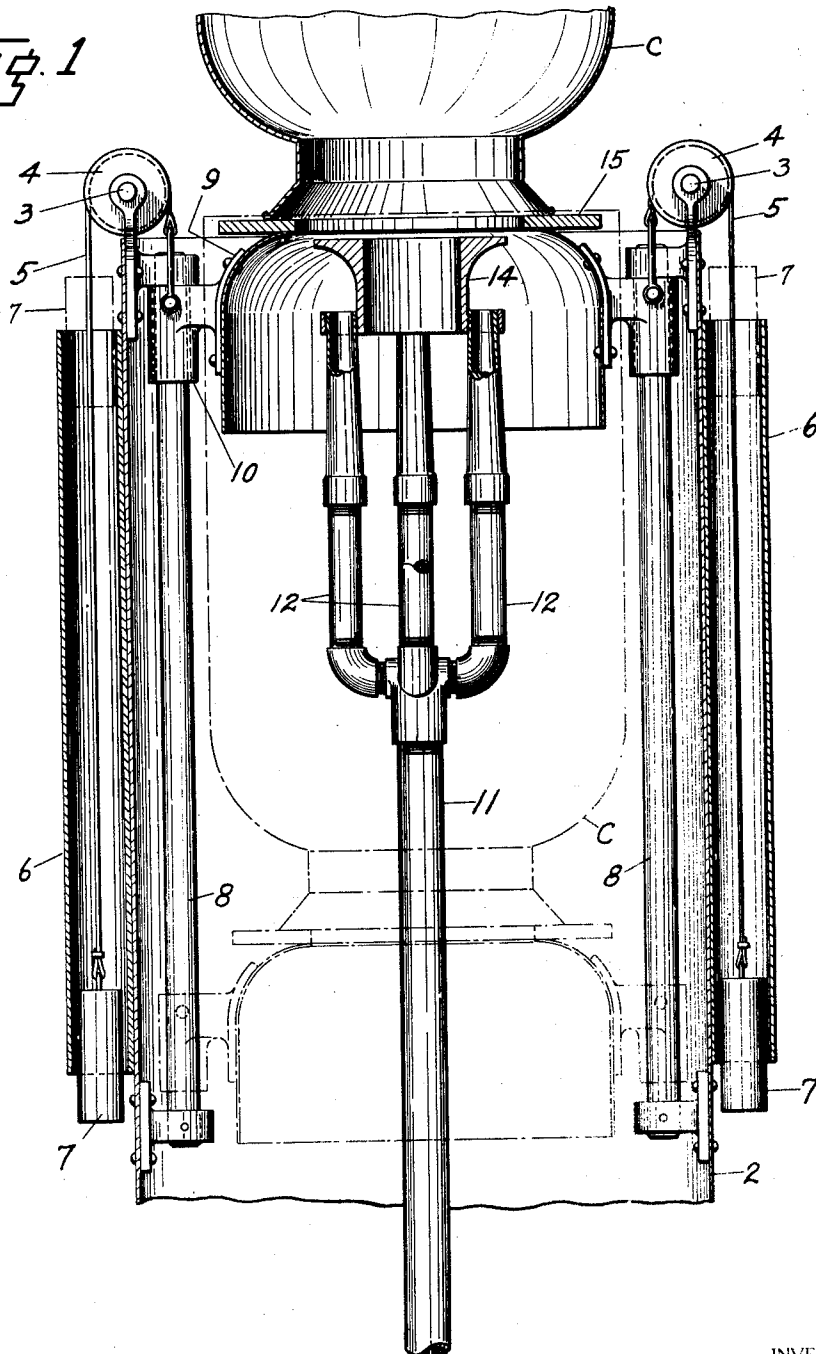
1,678,252

I. H. KENDALL
CAN WASHING DEVICE

Filed Dec. 29, 1923

4 Sheets-Sheet 1

Fig. 1



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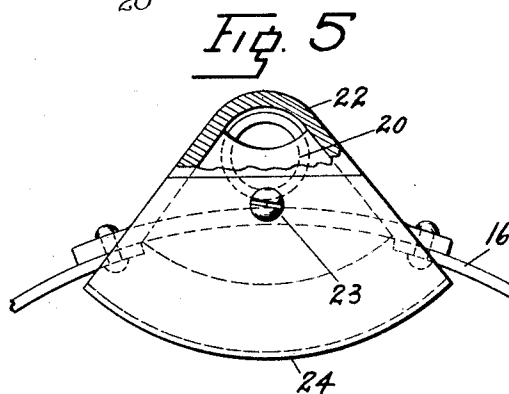
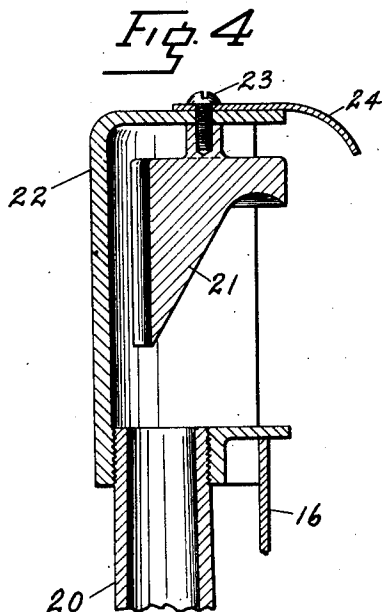
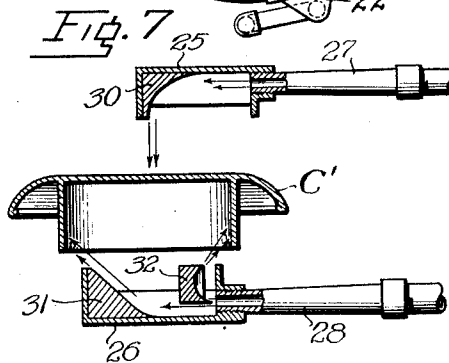
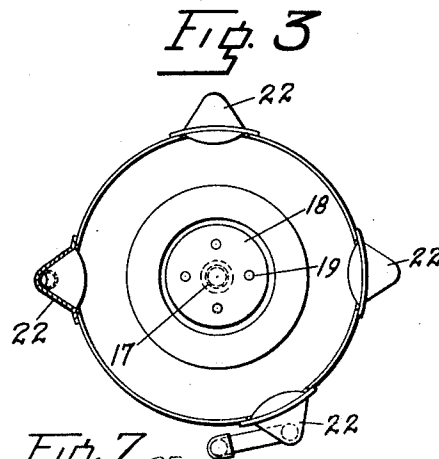
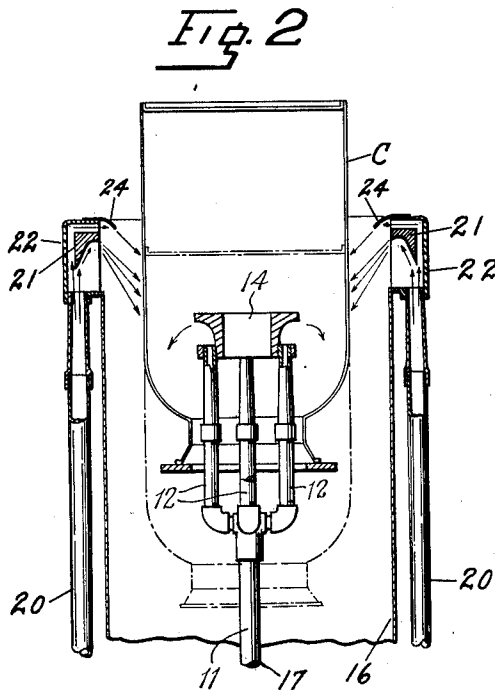
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4 Sheets-Sheet 2



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Fig. 8

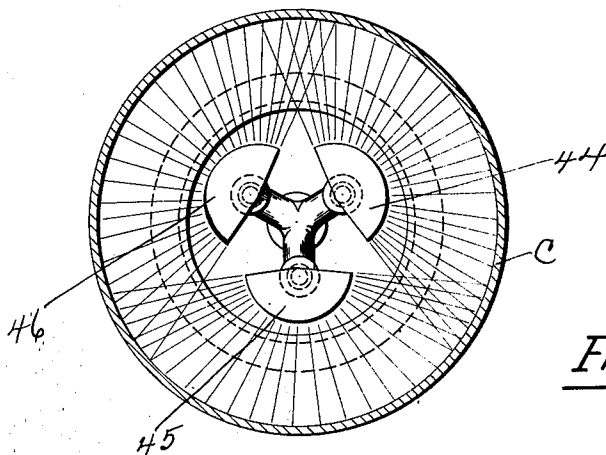


Fig. 10

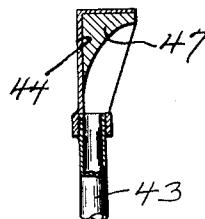


Fig. 9

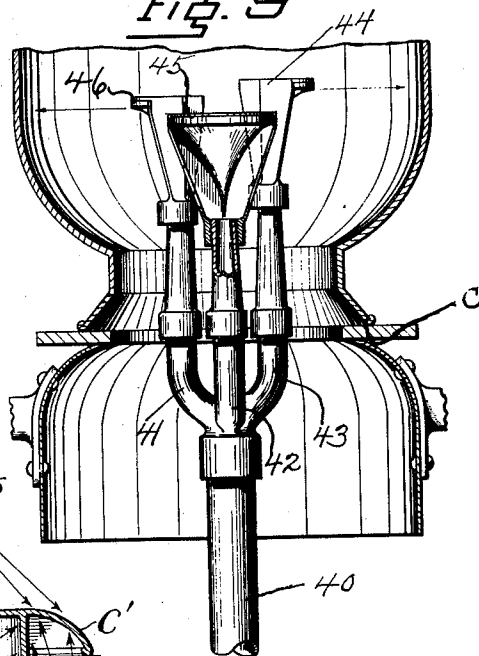
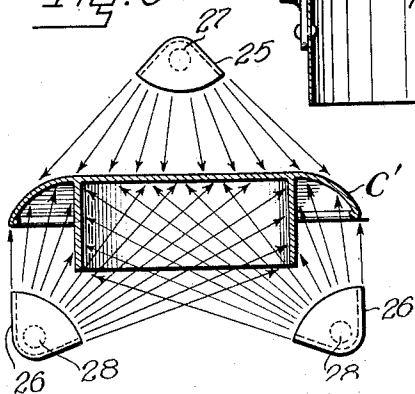


Fig. 6



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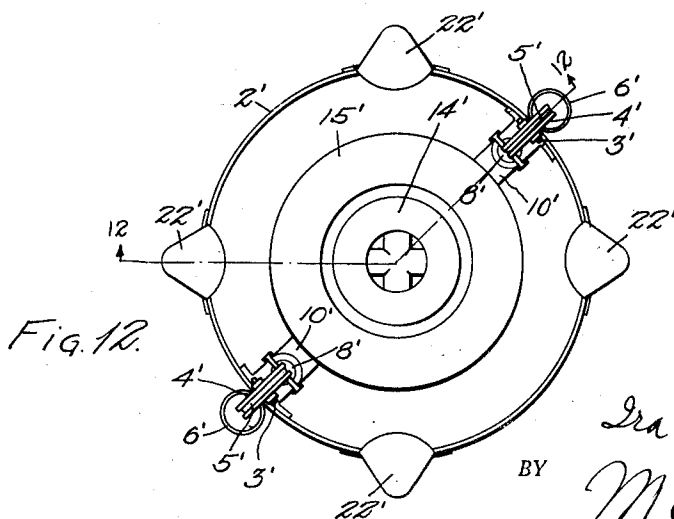
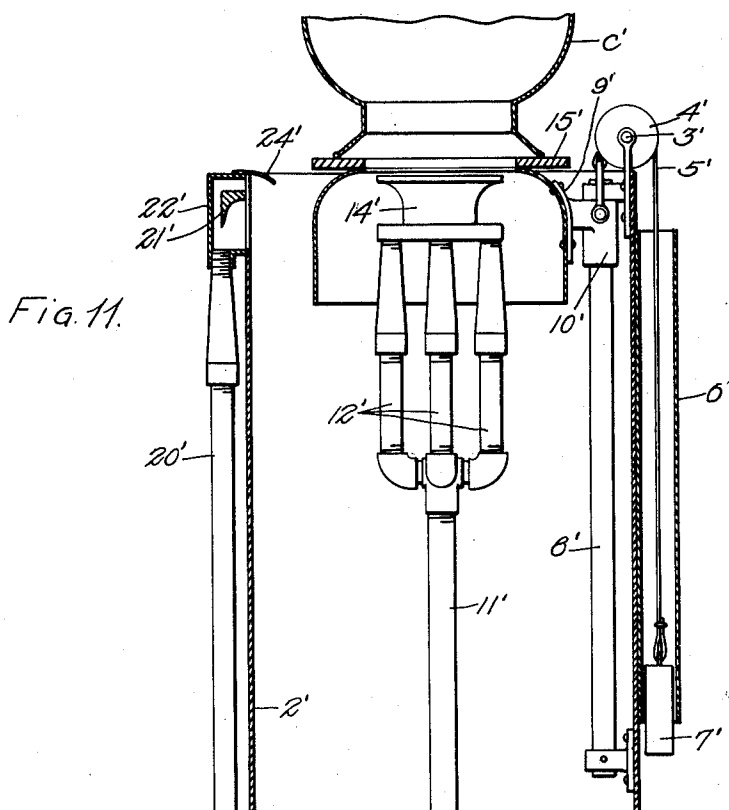
1,678,252

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4 Sheets-Sheet 4



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1,678,252

UNITED STATES PATENT OFFICE.

IRA H. KENDALL, OF POTSDAM, NEW YORK, ASSIGNOR TO THE KENDALL PATENTS, INC., OF POTSDAM, NEW YORK, A CORPORATION OF NEW YORK.

CAN-WASHING DEVICE.

Application filed December 29, 1923. Serial No. 683,308.

My invention relates to new and improved can washing devices.

One of the objects of my invention is to provide new and improved can washing devices which can be incorporated in various types of can washing machines and particularly in that type described in my application, Serial No. 551,570, filed April 11, 1922.

Another object of my invention is to provide can washing devices whereby the interior of a milk can or other receptacle, can be thoroughly washed by the impact of a large volume of water which is spread out laterally so as to subject every portion of the interior or exterior of the can or other receptacle to a thorough washing action.

Another object of my invention is to provide can washing devices of such character that the water delivered thereto from a pipe or pipes is spread out laterally, that is, in a horizontal plane without the danger of any clogging of the nozzles or other washing devices used.

Another object of my invention is to provide can washing devices which shall be particularly effective upon the dirtiest portions of certain receptacles, such as milk cans, namely, upon the flaring body portions, necks and heads of such milk cans.

Another object of my invention is to provide washing devices which shall be operable to thoroughly cleanse the covers of milk cans.

Other objects of my invention will be set forth in the following description and drawings which illustrate preferred embodiments thereof.

Fig. 1 is an elevation partially in section showing one form of my invention.

Fig. 2 is an elevation partially in section illustrating a washing device in which the interior and the exterior of the can are simultaneously washed.

Fig. 3 is a top view of Fig. 2.

Fig. 4 is a sectional view showing a detail of one of the exterior washing heads shown in Fig. 2.

Fig. 5 is a detail top view of the parts shown in Fig. 4 and it is partially in section.

Figure 6 is an elevation showing the use of washing heads for cleansing the cover of a milk can.

Figure 7 is a sectional view of the washing devices shown in Figure 6.

Figs. 8, 9, 10 illustrate another embodiment, showing different forms of nozzles adapted for use in either of the forms of washing machines herein illustrated.

Fig. 11 is an elevation partially in section showing a further modified form.

Fig. 12 is a section on the line 12-12 of Fig. 11.

In the embodiment shown in Fig. 1, the receptacle C, which in the embodiment herein illustrated, is a milk can, is mounted upon a support 15. The support 15 is adapted to be moved into and out of a tank 2. The mechanism for moving the support member 15 up and down is not illustrated in the drawings because various types of old and well known mechanism could be used for this purpose and my invention is neither directed nor limited to any particular type of such mechanism. Similarly, numerous other accessory parts which in themselves are old and well known are omitted from the drawings for the sake of clearness and such accessory parts are fully described in my former application, Serial No. 551,570. The tank 2 is provided with interior guide-rods 8 on which guides 10 are slidably mounted. The guides 10 have a shield 9 connected thereto. Exterior to the tank, guides 6 are provided for the slidable weights 7 and these weights 7 are connected to the guides 10 by means of ropes 5 which pass around pulleys 4 mounted upon the bearings 3. The weights 7 normally keep the shield 9 at the upper end of the tank 2, as shown in full lines in Fig. 1.

The baffle 14 is designed to deliver a horizontal sheet of water and as this sheet of water is of high velocity, this would cause a good deal of splashing when the water came in contact with the sides of tank 2 if it were not for this shield 9. This shield may have its upper edge above the sheet of water, so that this sheet of water will be deflected downwardly. The water is thus diverted vertically into the tank, and will not come in contact with the top of the sides of tank 2. When the support for the receptacle is lowered, it lowers the shield 9, which is forced into its lower position shown in dotted lines in Fig. 1.

Hence, the vertically movable shield 9 which contacts with the can support 15 with its upper edge above the sheet of water permits the use of a continuous flow washing

head, in which the sheet of water is diverted downwardly by shield 9 and confined within the receptacle C. The object of this shield is to permit the use of a continuous flow head delivering a substantially horizontal sheet of water to prevent the sheet from coming in contact with the top of tank 2, and thus prevent splashing from this tank. When the can leaves this tank the shield remains above this sheet of water, diverting the sheet downwardly and it remains above this sheet until it is forced downwardly by the support 15 so that this sheet is confined within the can.

15 A pipe 11 which communicates with any suitable source of water under pressure is vertically mounted within the tank 2 and this pipe 11 has a plurality of symmetrically arranged nozzles 12 at the upper portion thereof. The nozzles 12 are closely adjacent a stationary and hollow baffle 14 which is supported by any suitable means. The baffle 14 can be connected to pipes 12 in any suitable manner. When water is delivered through the nozzles 12 under considerable pressure each stream of water is deflected outwardly and it also spreads laterally, that is, in a direction perpendicular to the axis of the baffle 14.

30 Hence the interior of the can is washed by a series of arcuate and continuous sheets of water which may overlap, or be slightly spaced from each other or have their edges coinciding as they impinge upon various portions of the can so that every portion of the interior of the can is subjected to the washing action of a very large volume of water. This water may be mixed with various cleansing agents but I prefer to use pure water free from alkalis and carrying a certain amount of sand or other suitable abrasive.

40 In the embodiment shown in Fig. 1, the sheet or sheets of water which are finally deflected from the baffle 14 move outwardly in a substantially horizontal direction so that a very powerful cleansing effect is exerted upon the inside of the can, but by suitably shaping the baffle 14, said sheet or sheets may be projected at any desired angle. It may be noted that the four jets of water delivered from the nozzles 12 may be caused to coalesce into a continuous circular sheet before the water leaves the baffle 14 as this can be done by suitably dimensioning and shaping the various parts.

50 Experience has shown that if a very large volume of water is delivered into the interior of the can, which is highly desirable, drainage of the water out of the can is interfered with when the washing head is in operation and delivering a horizontal sheet, as the sheets of water prevent the free drainage of water if the baffle 14 is made solid.

60 This interference with the free drainage of the washing water, which will take place when sufficient water is forced into the can, substantially reduces the full washing action of the sheets of water, but this is taken care of in the present design by the hollow baffle 14, which allows the wash water to drain out of the can through this hollow baffle and into tank 2. It is not expected that this washing head will wash the bottom of the can but the purpose of the tank 2 together with this horizontal sheet of water, hollow baffle plate, and the retarding control device (shown in my companion application filed on the same day) is to wash the flare of the neck, the neck of the can, and the flaring body portion of the can and the side of the can as far as the head moves into the can, giving this portion of the can an extremely violent washing. If the baffle 14 is solid, experience has shown that when a large volume of water is forced into the can, it does not drain out with sufficient rapidity from the upper part of the can. However, the hollow baffle 14 permits the drain water to pass out of the can through the central hollow portion of baffle 14, especially when the can is in the lower position shown in dotted lines in Fig. 1.

Fig. 2 illustrates how the tank 16 is provided with washing mechanism for cleansing the exterior of the can. Hence, the can may be washed in tank 16 as well as in tank 2 illustrated in Fig. 1 so that the outside of the can is given a thorough cleansing and the inside of the can may be subjected to a plurality of washing operations. The pipes 20 located on the outside of the tank 16 are each connected to a washing head 22 provided with a baffle 21 spaced therefrom. The outer vertical edge of each baffle 21 is on a vertical line passing through the interior of its pipe 20 and this line is preferably not coincident with the axis of the pipe 20, but is close to the outer end of the pipe 20. Each baffle 21 is connected to its washing head 22 by a screw 23 and this also serves to support a deflector 24. Hence each jet of water delivered through each pipe 20 is divided into two portions by the adjacent baffle 21. The greater portion of the water of each jet is directly deflected by the inner portion of each baffle 21 against the outside of the can. Since a large volume of water is desirable, and a high velocity for this large volume of water is also desirable, a very violent splashing is prevented by the relatively small amount of water which passes between each washing head 22 and the outer portion of its baffle 21, which is deflected downwardly by the annular deflector 24. This upper sheet of water acts as a blanket to minimize any upward spattering of the lower sheet of water. It will be noted that each washing head such as the washing head 22, for example, has a solid wall substantially parallel

to the axis of the associated pipe and an end wall which is inclined to the axis of the pipe and which is opposite the mouth of the said pipe so that any water which impinges upon the end wall issues laterally from the lateral mouth of the washing head. It will also be noted that the baffle 21 which is located in the hollow washing head is located opposite the mouth of the associate pipe and between the deflecting end wall and the mouth of the pipe.

This is very important especially in cold weather, as otherwise working conditions become very disagreeable, and the proper action of the mechanism can be affected if ice accumulates from the spattered water.

As shown in Fig. 5, each washing head 22 and each baffle 21 has what may be called a wedge shape or contour in a horizontal plane so that each jet of water delivered by each pipe 20 is spread out laterally so that the sheets of water delivered by the respective washing heads 22 are continuous and the sheets cover the entire area of the outside of the can, as it is raised and lowered within the tank 16.

As before mentioned the sheets of water delivered by the washing heads 22 may be caused to overlap upon the outside wall of the can. In the embodiment shown in Figs. 6 and 7 it is assumed that each can cover C' is moved in a horizontal plane in any suitable path. The top of the cover C' is acted upon by a washing head 25 which is supplied with water under pressure through a pipe 27 and it has a baffle 30 whereby the water delivered through the pipe 27 is spread out into a continuous circular sheet so that all parts of the top of the cover are thoroughly washed. The underside or interior of the can cover is washed by means of two washing heads 26 each of which is fed with water under pressure through a pipe 28. Each washing head 26 is provided with baffles 31 and 32 so that the water entering through the pipe 28 is deflected and spread out laterally so as to form a conical sheet. As the cover C' is moved from one washing head 26 to another, each washing head operates to first wash the outer wall of the flange of the cover as well as the interior of the top thereof. As shown in Fig. 6 every portion of the underside of the can cover C' is thoroughly washed by means of a large volume of water as the cover passes from one head to another.

In Fig. 7, the cover C' is supposed to be moved in the plane of the paper. It will be noted that as the cover passes over each washing head 26, that the entire interior of the flange thereof is washed by a conical sheet of water which spreads upwardly and then inwardly along the top of the cover as before explained with reference to the

washing of the can C so that the cleansing action is very thorough.

Simultaneously, as shown in Fig. 6, the water is spread out by the baffles in the washing heads so as to form a sheet, the elements of which are inclined at various angles to the line of movement of the said cover so that the overhanging portion of the cover C' is also very thoroughly washed by a similar action.

Hence, as shown in Fig. 6, for example, every part of the top of the can cover C' is washed by means of a downwardly directed solid sheet of water which spreads out laterally when it strikes against the top of the can cover, so that every part thereof is subjected to an efficient washing action. The underside of the can cover is washed by two intersecting sheets of water. The lines of movement of each body of water which acts upon the underside of the can cover, have a double inclination in each of two perpendicular planes. Thus as shown in Fig. 7, the baffles 31 and 32 cause the body of water delivered by one of the washing heads 26 to move in diverging inclined paths in a plane which is substantially parallel to the direction of movement of the cover C'. The baffles 31 and 32 are shaped so that the portions of the jet of water delivered through the pipe 28 which impinge thereon, are spread out in a direction substantially perpendicular to the plane of movement of the cover C'.

I prefer to have the baffle 32 so located that it takes substantially half of the jet of water delivered through the pipe 28.

In the embodiments shown in Figs. 8, 9 and 10, the pipe 40 which is connected to a source of water under pressure, is connected to three symmetrically arranged nozzles 41, 42 and 43, the said nozzles respectively having the washing heads 46, 45 and 44. Each washing head has a baffle of the contour shown in Fig. 10 which illustrates the baffle 47 of the washing head 44. Hence, each washing head delivers an arcuate sheet of water and these arcuate sheets overlap when they strike the body of the can, at any desired point of the body of the said can. Hence the can is washed by a plurality of bodies of water which are caused to impinge upon and cover overlapping zones of the can.

In order to prevent interference and splashing, the washing heads are located so that they deliver their three sheets of water at various heights. This has been found to minimize undesirable splashing. In these Figures 11 and 12 I show how the devices or elements illustrated in the preceding figures may be combined in a unitary structure.

In said Figures 11 and 12 the reference characters c', 2', 3', 4', 5', 6', 7', 8', 9', 10', 11', 12', 14', 15', 20', 21', 22', and 24'

indicate the same parts as do the corresponding reference characters in the other views, minus the ' mark.

I have shown several preferred embodiments of my invention, but it is clear that numerous changes and omissions could be made without departing from its spirit, and I do not wish to be limited to the details herein specified.

I prefer to have the sheets of water supplied by the various washing heads herein illustrated, in the form of solid sheets which are caused to perform their cleansing function before they have broken up into drops or spray. This causes each sheet of water to spread laterally upon the surface on which it impinges and this assists in securing the proper cleansing action.

It is to be noted that wherever I refer in the description or claims to can washing devices, that I do not thereby wish to limit my invention to the purpose of washing cans or milk cans alone, and that furthermore, I consider that the cover of a milk can or the like, is a portion of the complete receptacle, so that my invention is also directed to this purpose.

I claim:

1. In washing devices for cans or other receptacles, the combination of a tank, a support therein for the can adapted to be moved upwardly and downwardly, a washing device located within said tank and a shield movable with said support located within said tank and adapted to prevent any spattering of the water supplied to the washing device.

2. In washing devices for cans or other receptacles, the combination of a tank, a support therein for the can adapted to be moved upwardly and downwardly, and washing devices located within said tank and adapted to force water against the interior of the can in a direction inclined to the vertical axis of the can, and a shield movable with said support located within said tank and adapted to prevent spattering, and means adapted to normally keep said movable shield at the upper end of said tank.

3. In washing devices for cans or other receptacles, the combination of a tank having a plurality of washing heads at the ex-

terior thereof, each washing head having a pipe for delivering water thereto, each washing head having a baffle which is spaced therefrom, each said baffle being adapted to divide the water delivered from the respective pipe into a plurality of bodies which separately impinge upon the can, and a deflector adapted to deflect one of said bodies toward the bottom of the can.

4. A washing device for cans or other receptacles comprising a hollow washing head having a pipe connected thereto, said washing head having a lateral mouth and having an end wall which is aligned with the mouth of the said pipe and which is inclined to the axis of said pipe, said washing head having a baffle member located therein, said baffle member being located opposite the mouth of the said pipe and intermediate said mouth and the said end wall, the said baffle member having a deflecting surface adapted to deflect any water impinging thereon, so that the water issues from the lateral mouth of the said washing head in two separate bodies inclined to the axis of the said pipe.

5. A washing device for cans or other receptacles comprising a hollow washing head, a pipe associated therewith, said washing head being transversely tapered and having an end wall inclined to the axis of the said pipe and opposite to the mouth of the said pipe, and a baffle member located in said washing head opposite the mouth of the said pipe and intermediate said mouth and said end wall, said baffle member having a deflecting surface adapted to deflect any water impinging thereon, so that the water issues from the lateral mouth of the said washing head in two separate bodies inclined to the axis of the pipe.

6. A washing device for cans or other receptacles comprising a hollow washing head, a pipe associated therewith, said washing head being transversely tapered and having an end wall inclined to the axis of the said pipe and opposite to the mouth of the said pipe.

In testimony whereof I hereunto affix my signature.

IRA H. KENDALL.