Aug. 28, 1923. 1,466,141

C. A. MILLER

BOTTLE RINSING MACHINE

Filed July 22, 1920 2 Sheets-Sheet 1

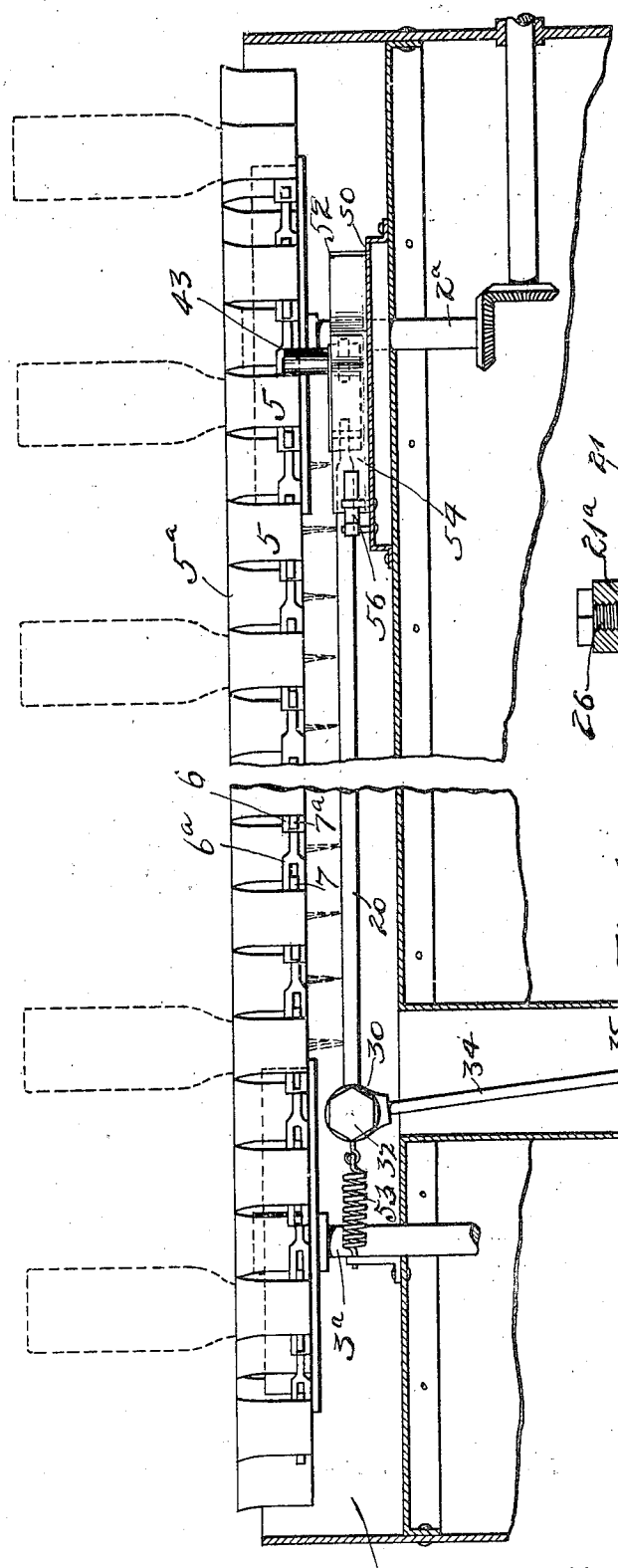


Fig. 1.

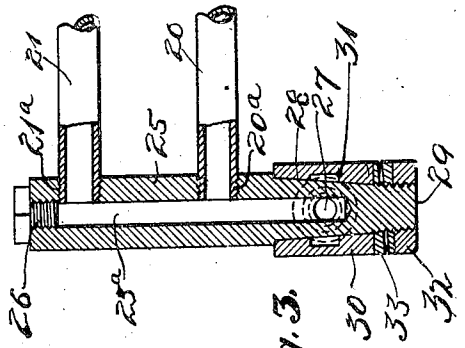


Fig. 3.

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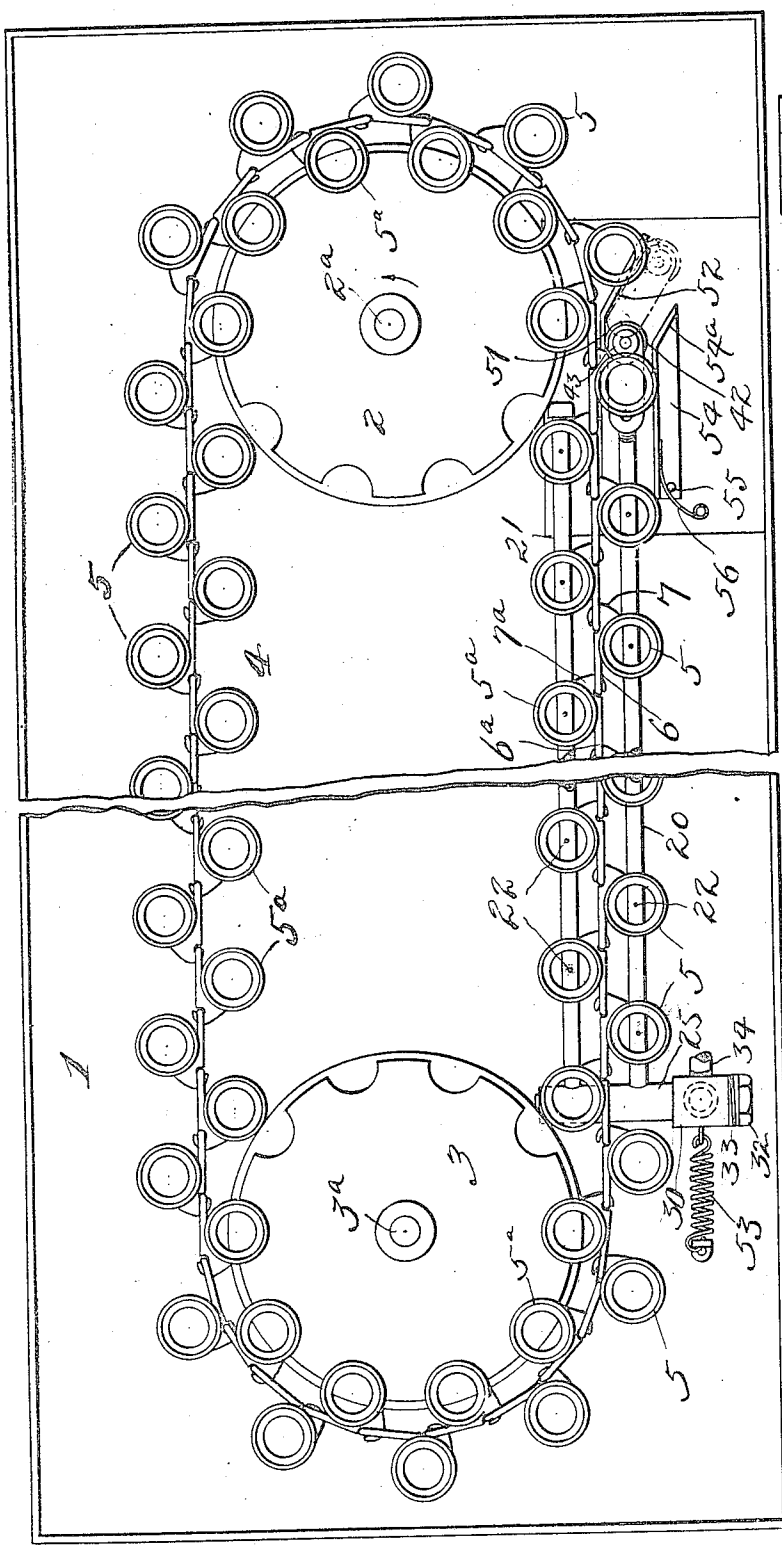


Fig. 2.

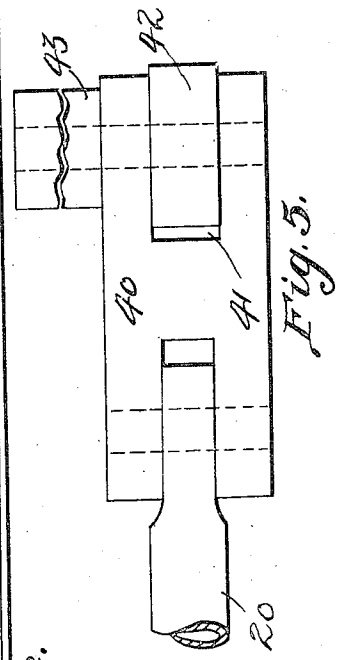


Fig. 3.

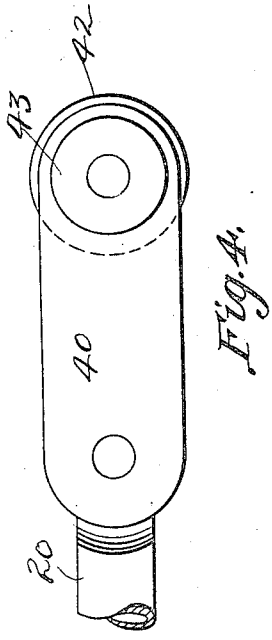


Fig. 4.

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Patented Aug. 28, 1923. 1,466,141

UNITED STATES PATENT OFFICE.

CHARLES ALVIN MILLER, OF BAINBRIDGE, GEORGIA, ASSIGNOR TO MILLER MANUFACTURING COMPANY, OF DECATUR COUNTY, GEORGIA, A CORPORATION OF GEORGIA.

BOTTLE-RINSING MACHINE.

Application filed July 22, 1920. Serial No. 398,110.

To all whom it may concern:

Be it known that I, CHARLES A. MILLER, citizen of the United States, residing at Bainbridge, in the county of Decatur and State of Georgia, have invented certain new and useful Improvements in Bottle-Rinsing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for washing or rinsing bottles and its object is to project one or more jets or streams of cleansing fluid into the mouth or mouths of one or more bottles, being moved continuously in one direction, in such manner as to maintain the jet or jets moving back and forth, but moving with the bottle or bottles during the major portion of the time.

The invention comprises, in general, a carrier having open-ended, tubular holders adapted to hold bottles, bottom up, means for moving the carrier so as to move the bottles always in one direction, and means moving alternately in opposite directions parallel with the carrier and at the same rate of speed when moving in the same direction, and adapted to forcibly inject a stream or streams of detergent liquid into each bottle during its travel therewith, as particularly pointed out in the appended claims.

In the accompanying drawings,

Figure 1 is an elevation of so much of an apparatus as is necessary to disclose my invention with the front wall of the tank or pan removed.

Figure 2 is a plan view of the mechanism shown in Figure 1;

Figure 3 is a section through a jointed coupling member or fitting forming part of the liquid-injecting or spraying means;

Figure 4 is a detail view of a fitting or connection at the free end of one of the pipes of the liquid-injecting or spraying apparatus, adapted to be engaged by the carrier to move the spraying pipe endwise in one direction;

Figure 5 is a side elevation of the parts shown in Figure 4.

Similar reference characters designate corresponding parts throughout the several views.

In the embodiment shown in the drawings, 1 indicates, conventionally, a tank or pan adapted to hold or to catch liquid and permit it to drain away. Sprocket wheels 2 and 3 are mounted on vertical shafts 2^a and 3^a, respectively, one at each end of the pan or tank 1. Engaging the sprocket wheels 2 and 3 is an endless chain bottle-carrier, designated generally by the numeral 4. This bottle carrier may be substantially of the construction shown in my prior Patent No. 1,181,913, dated May 2nd, 1916. It comprises a series of offset members comprising annular holders or bottle sockets 5 and 5^a, each of which is open at the top and bottom and preferably has a flaring top in order to allow the neck of a bottle to fit snugly into it. Each socket carries a link 6 or 6^a and an offset hook 7 or 7^a adapted to couple with a mating link. Alternate links are so constructed that the sockets are staggered or disposed alternately on opposite sides of the center line of the chain carrier, alternate sockets having the links and hooks projecting respectively from opposite sides. The sprocket wheels 2 and 3 are so constructed that the cups 5^a on the inner side of the carrier will fit between the sprocket teeth, whereby said sprocket wheels, when rotated, will continuously advance the carrier 4. Obviously it is possible to construct a carrier on this principle adapted to support more than two rows of bottles; any necessary guiding supports to prevent the carrier from sagging, may be provided, as will be understood by those skilled in the art.

In the embodiment shown, the fluid conductor and sprayer comprises two spraying pipes 20 and 21 located beneath one run or ply of the endless bottle carrier 4, the pipe 20 lying directly beneath the axes of the sockets 5 on the outer side of the endless carrier, and the pipe 21 lying directly underneath the axes of the sockets 5^a on the inner side of said endless carrier. Each of these pipes is provided with jet orifices 22 in its upper side, spaced identically with the spacing between the axes of the sockets 5 and 5^a. The free ends of the pipes, (at the right end of the pan 1, as shown in Figures 1 and 2,) are closed and the opposite ends are tapped into a hollow fitting at 20^a and 21^a, said fitting 25 having a bore 25^a plugged at 26, and having a lateral inlet 27

at the end opposite the plug 26. That end of the fitting 25 into which the inlet 27 is drilled is tapered, as shown at 28, and has a threaded stud 29 on its extremity. Embracing the tapered portion 28 is a sleeve 30 having a conical interior and into the side of the sleeve 30 is tapped an upright pipe 34. An annular or semiannular chamber 31 is formed on the interior of the sleeve 30, in communication with the inlet orifice 27, so that as the sleeve 30 rocks on the conical surface 28, the passage 27 will always be in communication with the pipe 34, that is tapped into the said sleeve. Threaded on the stud end 29 of the fitting 25 is a nut 32 and between said nut and the sleeve is a spring washer 33. The joint between the conical portion 28 and the interior of the sleeve 30 is accurately machined and the spring washer forces the sleeve 30 into close contact with the tapered surface so that a water tight joint is formed. The pipe 34, tapped into the sleeve 30, has its lower end connected by a suitable swivel or rocking joint 35 with a pipe 36 leading to a pump or head of liquid to be sprayed into the bottles. As a result of the jointed pipe connections described, the pipe 34 is adapted to vibrate or oscillate and the pipes 20 and 21 may freely reciprocate. Should the bottle carrier comprise more than two rows of sockets, the pipes of the conductor and sprayer would be multiplied accordingly.

In order to cause the spraying or jet throwing pipes to reciprocate so as to move at the same rate of speed in one direction as the bottle carrier, the bottle carrier itself is utilized as a means for imparting movement to the pipes in one direction while a spring or equivalent is utilized to impart the reverse movement thereto. Pivoted to the free end of the pipe 21 is a member 40. The member 40 has a horizontal slot 41 in its free end, in which is journaled an antifriction roller 42, the rim of which extends somewhat beyond the sides and end of said member 40. On top of the member 40 near its free end and preferably coaxial with the roller 42 is a projection consisting of a roller stud 43, that projects upward into the path of movement of a projection on the carrier, such as one of the sockets on the outer side of the endless chain carrier 4. Thus, when a socket 5 advances far enough it contacts with the stud 43 and pulls the stud, together with the member 40 and pipes 20 and 21 longitudinally at the same rate of speed as that at which the carrier is moving. Inasmuch as the orifices 22 in the upper sides of the pipes 20 and 21 are spaced identically with the spacing of the axes of the carrier sockets above them, and the roller stud 43 is so adjusted and positioned as to maintain said orifices beneath the several sockets when the stud 43 is in engagement with one of the sockets 5, a cleansing fluid (during the operation of the machine) will be projected in streams into the mouths of the several bottles resting in the sockets over the pipes, while the said pipes and bottles are traveling together in the same direction.

Mounted on the bracket shelf 50 upon which the free ends of the pipes 20 and 21 are guided is a switch cam or switch member 51 adapted to engage the roller 42 as the member 40 and pipes 20 and 21 are pulled along by engagement of the stud 43 with one of the sockets 5 on the carrier. When the roller 42 reaches the outturned end 52 of the stationary or fixed switch member 51, the pivoted member 40 will be swung outward and the stud 43 carried out of the path of the socket 5 with which it has been in engagement. At this time the pipes 20 and 21 will be quickly retracted by means of a spring 53 attached to the pipe section 25 and to the pan or other fixed portion of the machine. In order to reduce the jar and to guide the stud 43 and member 40 back into position to engage the next socket 5 of the endless carrier 4, a spring-tensioning cam or switch device 54, having an oblique end 54ª, is pivoted on the shelf 50 at the point 55, the spring 56 tending to force said member into normal position, as shown in plan view in Figure 2, where it will rest against the moving sockets 5, or may be checked by a specially provided stop, if desired. While the pipes 20 and 21 are being retracted by the spring 53, the member 40 will be properly engaged and guided into position by the said spring actuated switch device 54. The said fixed cam or switch 51 and the spring-held pivoted cam or switch 54 form, between them, a guideway that insures the proper retracting movement of the pivoted member 40 on the outer end of the pipe 21 so as to bring the stud 43 directly into the path of a socket 5. The stud 43 may be covered with a layer of some cushioning material, if desired.

Although I have shown a mechanism adapted to handle two rows of bottles at a time, it will be obvious that the same principle may be applied in machines carrying a greater number of rows of bottles, in the same direction; also, that, if desired, the mechanism on one side may be duplicated at the other side of the machine so that the bottles may be rinsed while travelling in both directions around the endless carrier. It will also be appreciated that the broad principle of my invention may be embodied in the combination of a bottle carrier with a single jetting nozzle.

By means of the construction illustrated and described it will be apparent that a caustic or other detergent liquid may be automatically jetted, sprayed or projected

into the mouths of a plurality of bottles, travelling only in one direction, during the major portion of their period and course of travel, since the jetting orifices in the spray pipes repeatedly move with the bottles at the same rate of speed in alternation with very quick returns effected by the spring 52, or other yielding tension-device. There can be no lack of coordination of movement of the bottle carrier with respect to the spraying or jetting apparatus owing to the fact that the bottle carrier comes into direct engagement with a member carried by the spraying apparatus and necessitates the forward movement of said apparatus with, and at the same speed as the bottle carrier. The means adopted for so moving the spraying pipes is of marked simplicity and certainty in operation.

Having described my invention in such manner as to enable others skilled in the art to which it appertains to make and use the same, what I desire to secure by Letters Patent of the United States is:

1. In a bottle washing apparatus, the combination of a bottle carrier adapted to move in one direction, a fluid conductor having a fluid emitting orifice and adapted to discharge a stream of fluid into a bottle on the carrier, said bottle carrier having projections equally spaced, a yieldable device tending constantly to move the conductor in a direction opposite the movement of the bottles to be cleaned, a member pivoted to the conductor, said member having a projection adapted to engage the projections on said carrier, means for disengaging the pivoted member from a projection on the carrier, at the limit of its movement in one direction, and a yieldingly tensioned switch so disposed as to insure the return of said pivoted member and the replacement of its projection in the path of the next preceding projection on the carrier.

2. In a bottle washing apparatus, the combination of a bottle carrier adapted to move in one direction, said bottle carrier having equally spaced projections, a fluid conductor having a fluid emitting orifice disposed and adapted to discharge a stream of fluid into a bottle on the carrier, means tending to move the conductor in a direction opposite the movement of the bottle to be cleaned, a member pivoted to the conductor, said member having a projection adapted to engage the projections on said carrier, a switch fixed to a stationary part of the machine for disengaging said pivoted member from the carrier, said switch having a portion parallel with the path of movement of said carrier and an inclined offset portion, a pivoted tensioned switch having an end substantially parallel with the offset portion of the stationary switch and adapted to replace the projection on the conductor after disengagement from the carrier so that said projection will engage the next successive projection on the carrier.

3. In a bottle washing apparatus, the combination of a bottle carrier adapted to move in one direction, said bottle carrier comprising an endless conveyer having offset open ended sockets for receiving the bottles, a fluid conductor having a fluid emitting orifice adapted to discharge a fluid into a bottle on the carrier, a pivoted member on the conductor having a stud adapted to be engaged by one of said sockets, means for disengaging the stud from the socket at the end of its travel with the carrier, means tending to retract the conductor and means tending to force the pivoted member laterally so that the stud will engage the next preceding socket.

4. In a bottle washing apparatus, the combination of a bottle carrier comprising an endless conveyer having offset, open ended sockets for receiving bottles, a fluid conductor having a fluid emitting orifice adapted to discharge a fluid through the sockets into bottles carried thereby, said fluid conductor being substantially parallel with the path of movement of the conveyer, yieldable means tending to move the conductor in a direction opposite the direction of movement of the carrier and means for intermittingly connecting the conductor with the carrier, said means comprising a device on the conductor constructed and arranged to be engaged and disengaged by successive sockets.

5. In a bottle washing apparatus, a bottle carrier comprising an endless conveyer having a plurality of series of equally spaced open ended bottle receiving sockets, sprocket wheels for supporting and operating said conveyer, one series of sockets engaging in the notches of said wheels, parallel pipes disposed in parallel relation with the series of bottle receiving sockets, respectively, said pipes having fluid emitting orifices spaced exactly in accordance with the spacing of the centers of said sockets, yieldable means tending to move the conductor in a direction opposite the movement of the carrier and means for intermittingly connecting the conductor with the carrier, said means comprising a device on the conductor constructed and arranged to be engaged and disengaged by successive sockets.

6. In a bottle washing apparatus, a bottle carrier, means for moving said bottle carrier in an endless path, a reciprocatable fluid conductor comprising a pipe disposed substantially parallel with the conveyer path, said pipe having a fluid emitting orifice disposed and adapted to direct a stream of fluid into a bottle on the carrier, a guide upon which one end of the conductor is adapted to slide, and an oscillatory pipe supporting

the other end of said conductor, said oscillatory pipe being constructed and adapted to conduct fluid to said conductor.

7. In a bottle washing apparatus, a bottle carrier having spaced offset members, means for moving said bottle carrier in an endless path, a reciprocatable fluid conductor comprising a pipe disposed substantially parallel with the conveyer path, said pipe having a fluid emitting orifice disposed and adapted to direct a stream of fluid into a bottle on the carrier, a guide upon which one end of said conductor is adapted to slide, an oscillatory pipe supporting the other end of said conductor, said oscillatory pipe being constructed and adapted to conduct fluid to said conductor, and means for intermittingly connecting the conductor to the conveyer, said means comprising a lug connected to the free end of said conductor in position to be engaged, advanced and disengaged by successive offset members.

8. In a bottle washing apparatus, a bottle carrier, means for moving said bottle carrier in an endless path, a reciprocatable fluid conductor comprising a pipe disposed substantially parallel with and beneath the conveyer path, said pipe having a fluid emitting orifice disposed and adapted to direct a stream of fluid into a bottle on the carrier, a horizontal shelf supporting one end of said conductor and an oscillatory pipe supporting the other end of said conductor, said oscillatory pipe being constructed and adapted to conduct fluid to said conductor.

In testimony whereof I affix my signature.

CHARLES ALVIN MILLER.