

A. BERBLINGER.
BOTTLE CLEANING AND BRUSHING MACHINE.
APPLICATION FILED JULY 11, 1910.

1,018,738.

Patented Feb. 27, 1912.

6 SHEETS—SHEET 1.

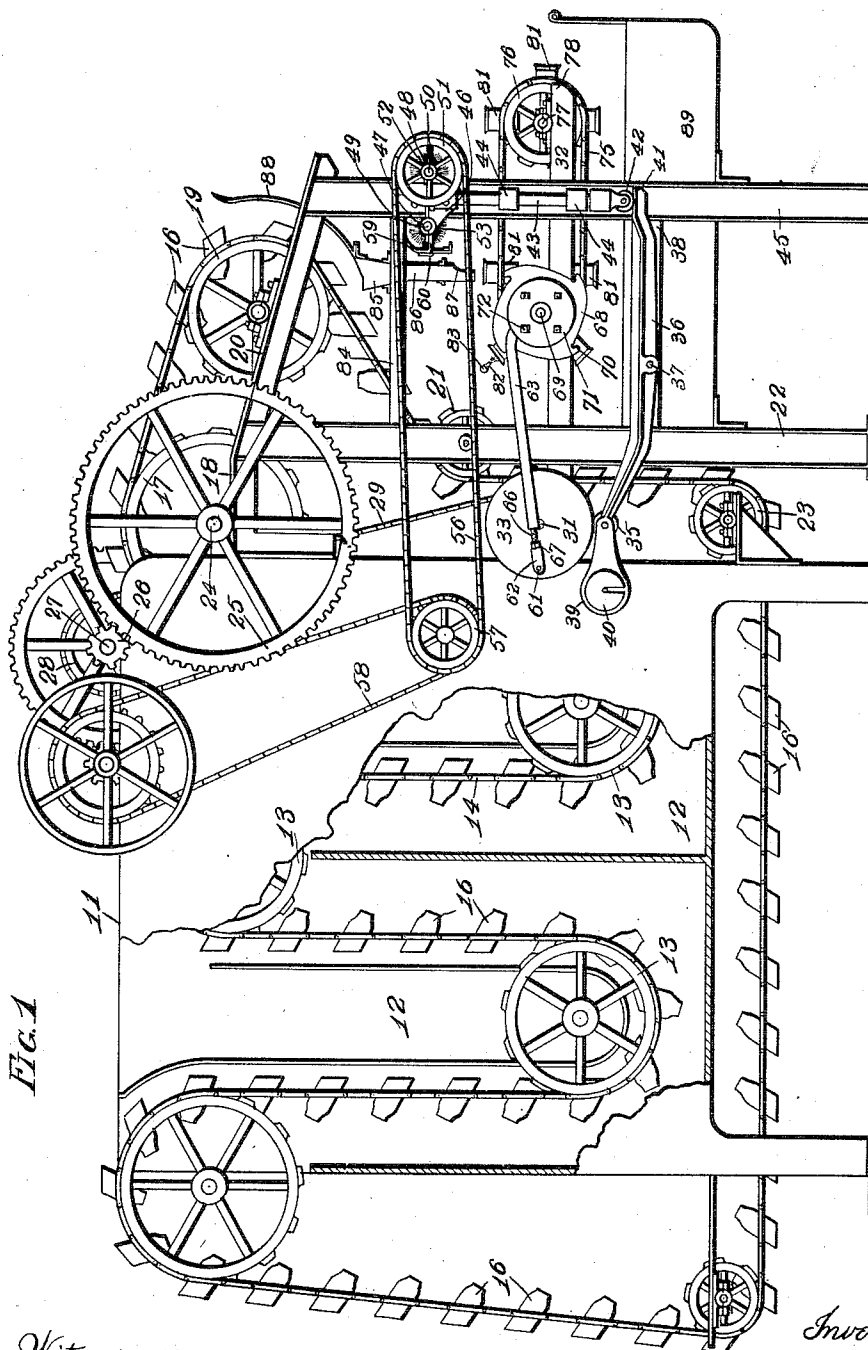


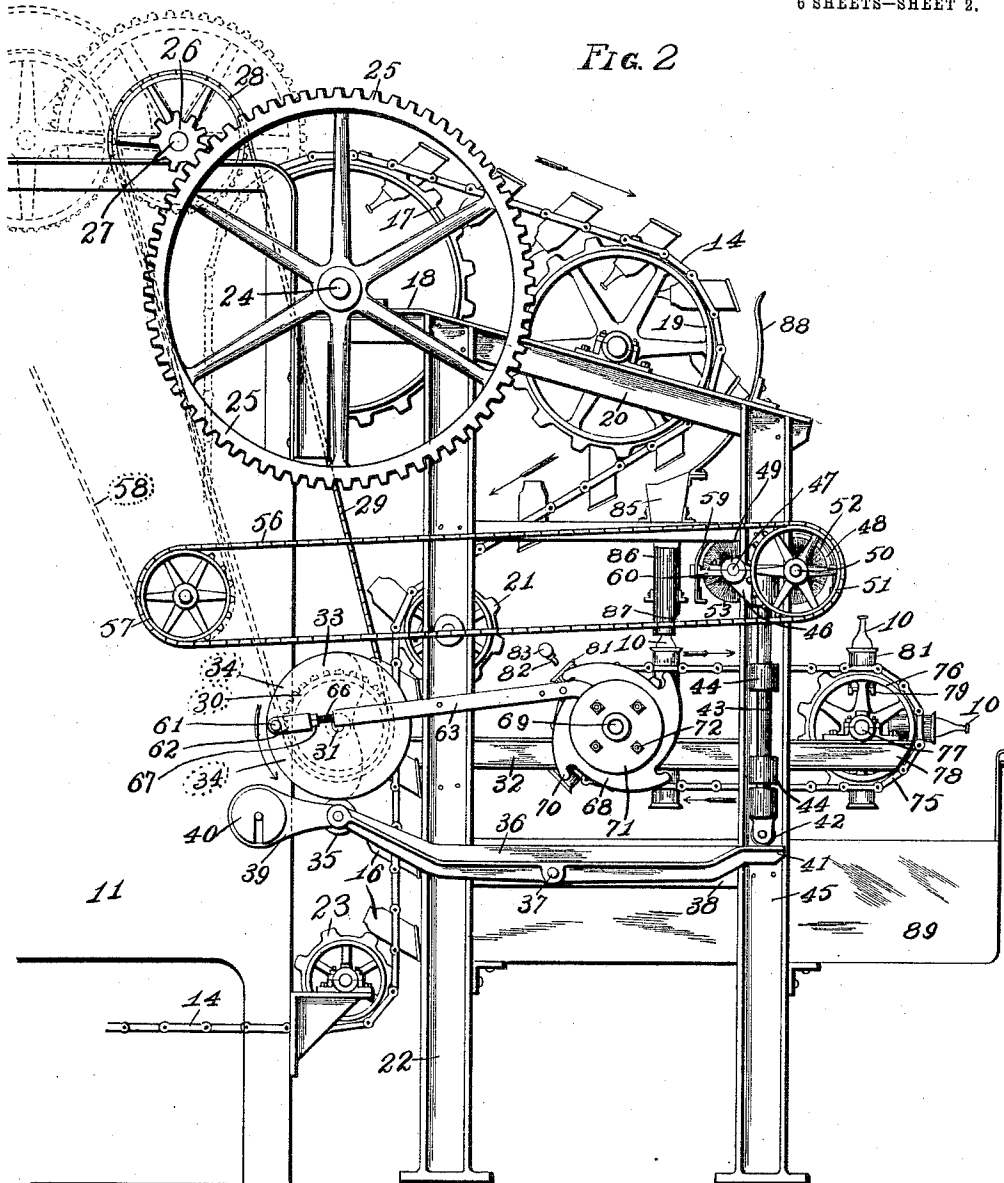
FIG. 1

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6 SHEETS—SHEET 2.



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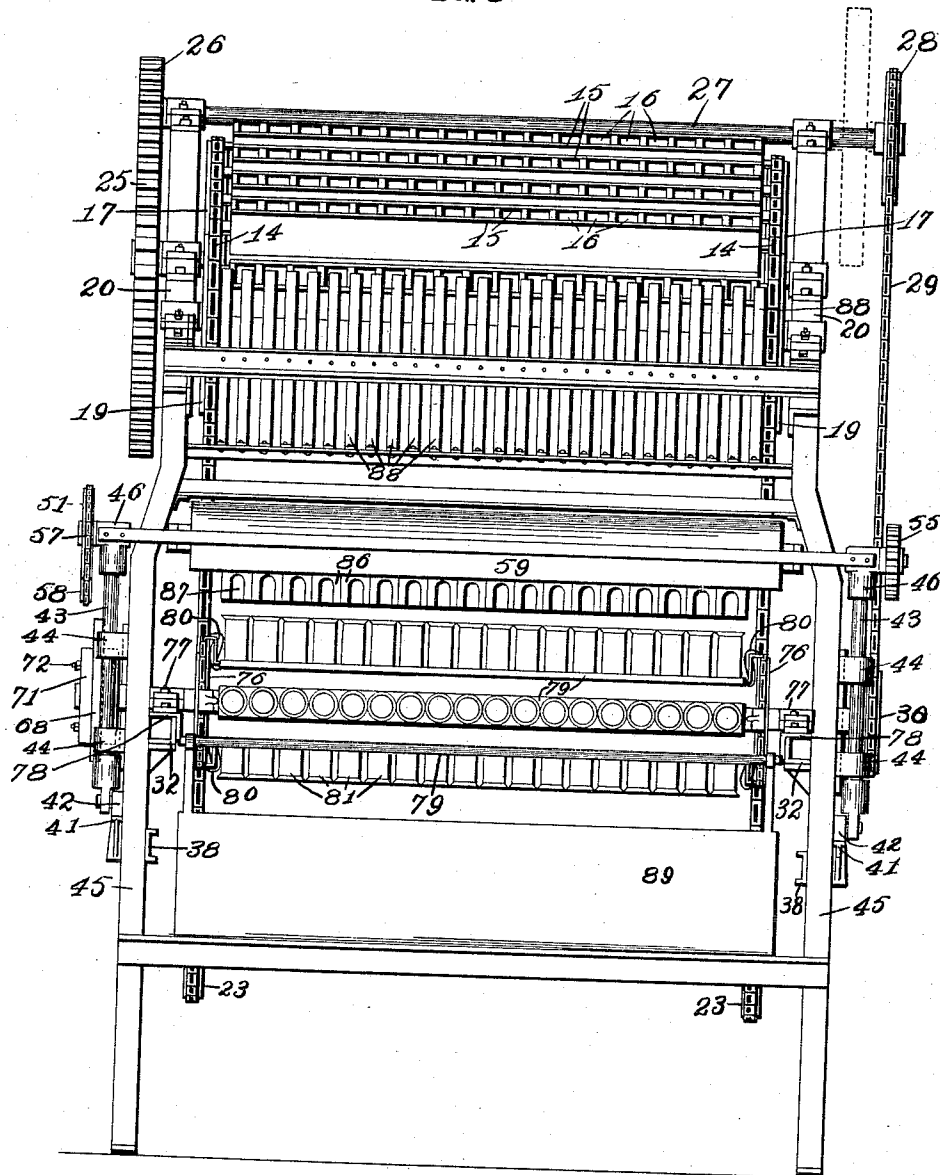
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6 SHEETS—SHEET 3.

Fig. 3



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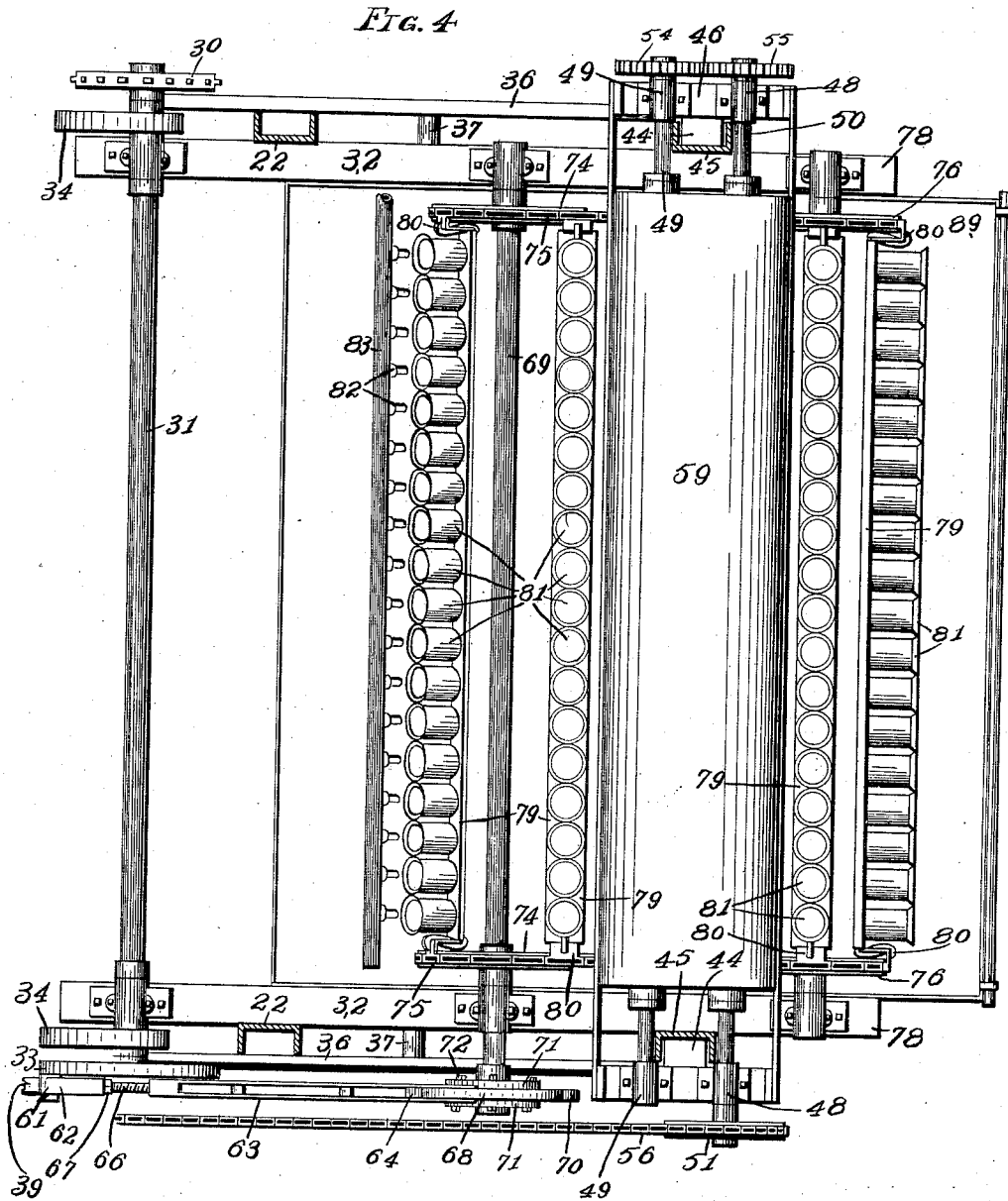
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6 SHEETS—SHEET 5.

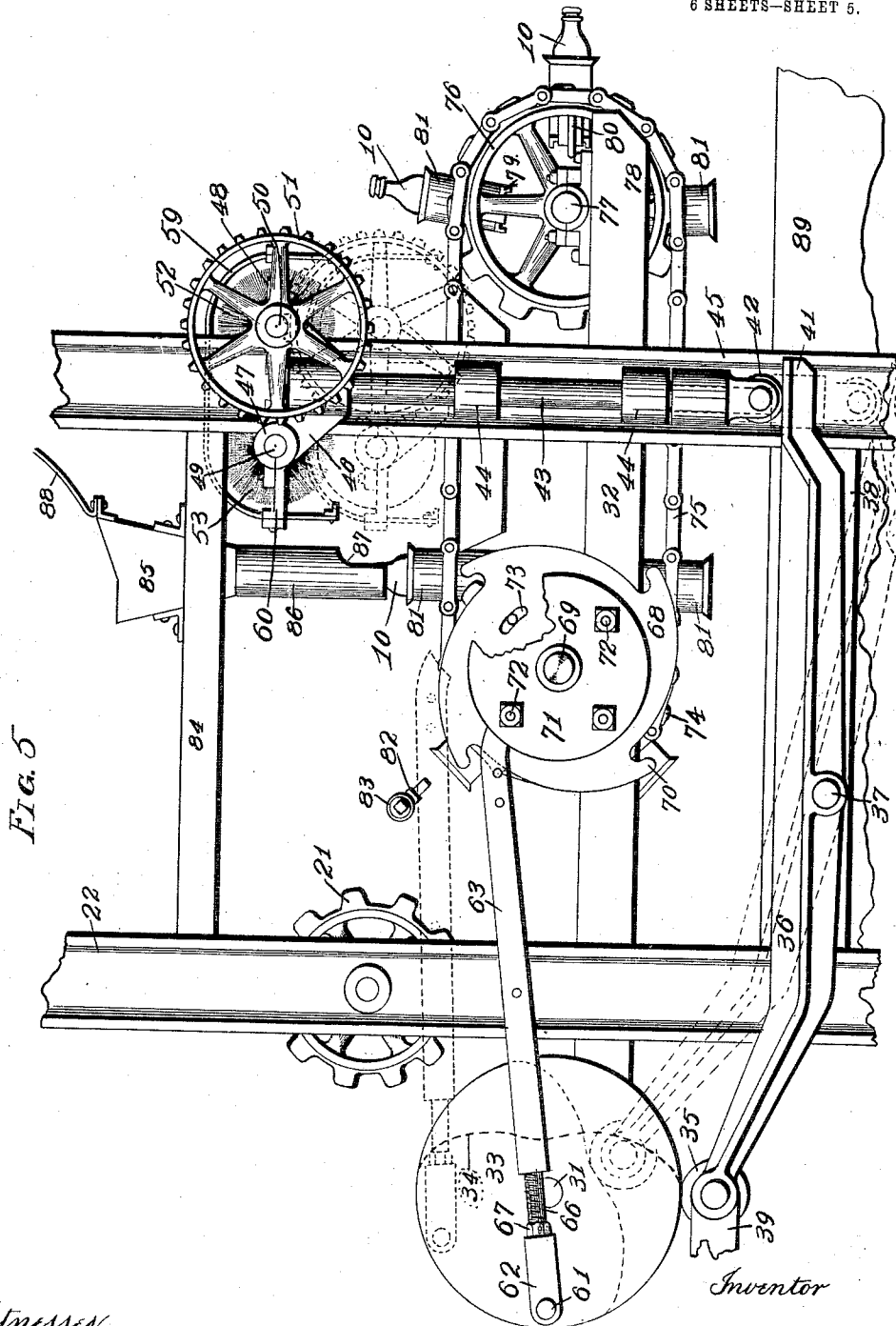


Fig. 5

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6 SHEETS—SHEET 6.

FIG. 6

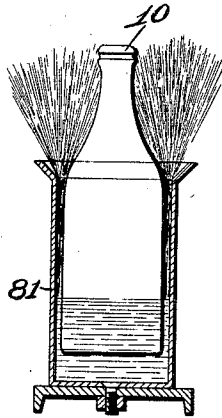


FIG. 7

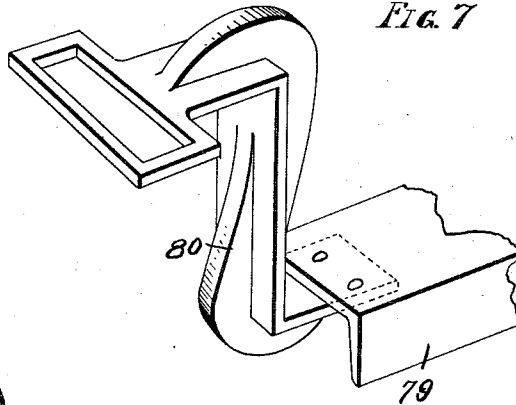


FIG. 8

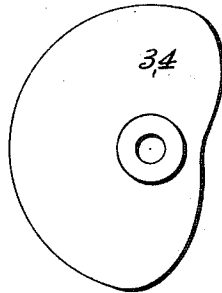


FIG. 9

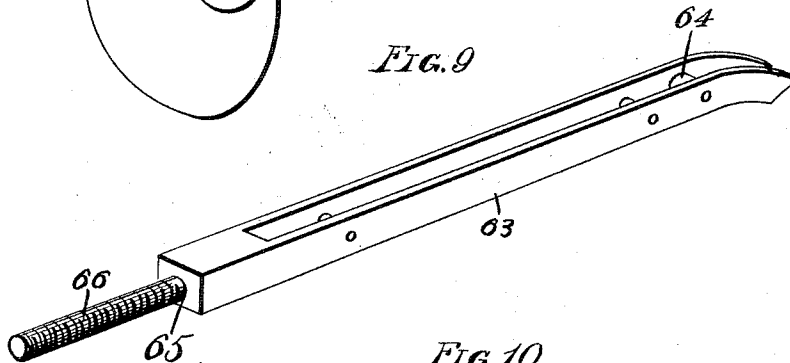
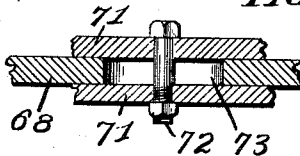


FIG. 10



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UNITED STATES PATENT OFFICE.

AUGUST BERBLINGER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ESSMUELLER MILL FURNISHING COMPANY, A CORPORATION OF MISSOURI.

BOTTLE CLEANING AND BRUSHING MACHINE.

1,018,738.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed July 11, 1910. Serial No. 571,408.

To all whom it may concern:

Be it known that I, AUGUST BERBLINGER, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Bottle Cleaning and Brushing Machines, of which the following is a specification.

This invention relates to improvements in a bottle-cleaning and brushing machine, and has for its object to provide an endless conveyer provided with a plurality of holders and so arranged as to carry the bottles after the same have been submerged through several cleaning compartments and deliver them into hoppers by which the bottles are conveyed to containers and brought in contact with revolving brushes for cleaning the outer surface of the necks of the bottles.

A further object of my invention is to provide a mechanism whereby bottles are conveyed at intervals in alinement with the revolving brush after the bottles have been passed through several washing compartments, said brushes so arranged as to be brought in contact with the bottles for cleaning the outer surface of the bottle necks and to remove the tin-foil which has been previously placed around the stopper.

In the drawings—Figure 1 is a side elevation of my complete invention with a part broken away and in section, showing my improvement attached to a washing compartment. Fig. 2 is a side elevation of my improvement on a larger scale than that shown in Fig. 1. Fig. 3 is a front view of my invention. Fig. 4 is a top plan view of Fig. 5. Fig. 5 is an enlarged detail side elevation of a portion of my invention showing the operating mechanism. Fig. 6 is a detail sectional view of one of the containers made use of for receiving and supporting the bottle, after it has been delivered through the hopper. Fig. 7 is a detail perspective view of one of the brackets made use of in supporting the containers to the endless chain. Fig. 8 is a detail view of the cam made use of in operating the containers step by step, and the brush-operating mechanism hereinafter described. Fig. 9 is a detail perspective view of the cam-operated ratchet lever made use of in carrying out my invention. Fig. 10 is a detail sectional view of the ratchet made use of and taken on the line 10—10 of Fig. 5.

Referring to the drawings in detail, 11 indicates a washing receptacle composed of any number of water compartments 12 in which are mounted shafts having sprocket wheels 13 over which an endless conveyer 14 operates, and on the endless conveyer are located cross-bars 15 between which are supported a plurality of holders 16.

Referring to Fig. 1, I show but two compartments, as a matter of convenience, whereas in practice I may use any number of compartments through which the bottles 10 are conveyed and thoroughly rinsed prior to being delivered into the brushing apparatus which will be fully hereinafter described and which forms one of the essential features of my invention.

The sprocket wheels 17 are located on the frame 18 in advance of and near the top of the receptacle 11, and over these wheels is passed the endless conveyer 14 which operates around the sprocket wheels 19 supported in bearings on the angular portion 20 of the frame 18; and from these wheels the endless conveyer is guided by and passed over the sprocket wheels 21 supported on the upright 22 of the frame, and from these wheels the conveyer is passed over the sprocket wheels 23, which are located at the front of and below the bottom line of the receptacle 11.

On the shaft 24 which supports the sprocket wheels 17 is mounted a large gear wheel 25 which meshes with a gear pinion 26 supported in bearings on the top of the receptacle 11; and on the shaft 27 supporting the pinion 26 are located the driving gears by which the improved mechanism is placed in operation. This gear mechanism is shown by dotted lines (see Fig. 2) and is not considered new in connection with my invention. On the shaft 27 is also mounted a sprocket wheel 28 over which is mounted a sprocket chain 29 which passes around a sprocket wheel 30 mounted on a shaft 31 and supported in bearings located on the horizontal bar 32 of the frame 18.

On the end of the shaft 31 is located a wrist plate 33 and cams 34. The formation of the cams is shown in Fig. 8, and said cams when in rotation are designed to come in contact with the rollers 35 mounted on the rocking arm 36 pivotally connected at the point indicated by the numeral 37 to the

cross-bar 38 of the frame and on the end of the rocking lever 36 and projecting rearwardly is a weight supporting arm 39 on which may be placed weights 40 of any number so as to counterbalance the action of the brush mechanism which the rocking levers operate.

The opposite end 41 of the rocking lever is designed to come in contact with a roller 42 mounted on the lower end of the brush supporting rods 43, and said rods are guided in bearings 44 formed on the front vertical members 45 of the frame. The construction of this mechanism is clearly set out in Fig. 5. A rod of this character is located on each side of the machine and on the upper end of each of said rods is located a cap casting 46 on which are formed bearings 47 and 48. In said bearings are located shafts 49 and 50. The shaft 50 is provided with a sprocket wheel 51 by which the brushes 52 and 53 are placed in revolution; said brushes being supported on the shafts 49 and 50 and are revolved in opposite directions by means of the meshing gears 54 and 55 supported on the shafts 49 and 50 (see Fig. 4). The sprocket wheel 51 is operated by the endless sprocket chain 56 which passes around a sprocket wheel 57 located to the rear of the machine, and motion is imparted thereto by a sprocket chain or belt, shown by dotted lines and indicated by the numeral 58, driven from any source of power.

Over the brushes 52 and 53 is placed a shield 59 and said shield is supported on the projecting arms 60 of the bearings 47 and 48 and its object is to prevent any object from coming in contact with the brushes from above. This brush mechanism is so arranged as to be raised and lowered by the manipulation of the rocking levers which are located one on each side of the machine so as to assume positions as shown by solid and dotted lines in Fig. 5, and when in the lowered position will contact with the necks of the bottles projecting from the containers, which will be fully hereinafter described, to remove all foreign substance from said bottles.

On the wrist plate 30 is provided a wrist pin 61 to which is attached the end 62 of the ratchet lever 63, the said lever consisting preferably of a bifurcated arm (see Fig. 9); its front end provided with a roller 64 and its opposite end with a threaded bore 65 in which is inserted a screw-threaded shank 66 and operated for adjustment purposes by the nut 67. The purpose of bifurcating the lever 63 is to permit its end to straddle the ratchet 68 which is mounted upon the shaft 69 and permit the roller 64 to contact with the teeth 70 so as to operate the ratchet at proper intervals step by step. On said shaft and on each side of the ratchet are located disks 71 which disks are secured to the

ratchet by bolts 72 passing through slots 73 formed in the ratchet, and are for the purpose of permitting the ratchet to be properly adjusted in connection with the ratchet lever so as to regulate the proper advance movement required. On the shaft 69 is also mounted a pair of sprocket wheels 74 over which operate the endless sprocket chains 75 and which are supported on similar sprocket wheels 76 mounted on the shaft 77 supported in bearings located on the projecting ends 78 of the cross-bar 32 of the frame (see Fig. 5).

At equal intervals apart and extending across the entire frame are bars 79, each end provided with brackets 80; a detail of which is clearly shown in Fig. 7, and the upper ends of said brackets are securely fastened to the chains 75. On the bars 79 are supported a plurality of containers 81 which are arranged to receive the bottles and convey them beneath the rotary brushes so that said brushes may be brought in contact with the same, and to each of the containers is fed a sufficient quantity of water by means of the jets 82 which communicate with the water supply pipe 83, to accomplish the following functions. The bottle is fed into the container and during its downward movement and when the bottle contacts with the body of water in the container, it has a tendency to force a film or sheet of water upwardly out of the container, and the sharp spray caused by this action has a tendency to remove and carry off any particles of labels or foreign substances still located on the outer surface of the bottle. A demonstration of this feature is shown in Fig. 6. The said containers 81 are all constructed of such diameter as to freely admit bottles of the size to be cleansed, but their diameters should only exceed the diameters of such bottles to a degree which will admit of the formation of the layer or sheet of water above described, and cause this forcible upward ejection.

On the cross-bar 84, which forms a part of the frame, is located a plurality of hoppers 85, the bottom ends of said hoppers provided with spouts 86 which is for the purpose of conveying the bottles as they are released from the holders of the endless conveyer into the series of containers located beneath the spouts, as shown in Fig. 5. A portion of each spout is cut away, as indicated by the numeral 87, so as to permit the bottle to pass out of the spout and permit the series of bottles in the containers to be brought in alinement with the brush.

In order to retain the bottles in the holders of the endless conveyer while passing around over the sprocket wheels 19, I provide a shield 88, its bottom end attached to the hoppers 85, and while the conveyer

is passing around the sprocket wheels 19 the bases of the bottles located in the holders have a tendency to slide partially out and contact with the shield until they are in alinement with the hopper; then, by gravity, the bottles will pass through the hopper and spout and are lodged in the containers located beneath the spout and carried by the endless chains 75.

In the frame and beneath the endless chains 75 I provide a tank 89 in which is contained a sufficient amount of water so that in the event the operators handling the machine forget to remove the bottles in the containers after they have been passed through the brushes, the bottles will have a tendency to fall into the tank and by means of the water contained therein will prevent said bottles from becoming broken.

The operation of my invention is as follows: The attachment previously described operates in conjunction with the washing vat and as the bottles contained in the holders of the endless conveyer have passed through the several compartments of the washing vat, the same are conveyed in the direction as indicated by the arrow (see Fig. 2), and as the same pass over the forward sprocket wheels 19 the bases of the bottles contact with the shield 88 until said bottles contact with the hopper, where, by gravity, the same are conveyed through the spouts in the water-filled containers 81; and as the entire series of bottles have entered the containers the wrist plate is operated in the direction indicated by the arrow (see Fig. 2), advancing the ratchet 68 by means of the ratchet lever, and advancing the entire series of containers and bottles directly beneath the revolving brushes. When said bottles have reached this point the depressed portion of the cams 34 permits the rocking levers 36 to operate and by the weight or gravity of the brush mechanism, will cause the front end of the levers to tilt downwardly and permit the brushes to come in contact with the necks of the bottles and assume the position as shown by dotted lines in Fig. 5, and remain in this position until the outer or greater portion of the cam contacts with the roller of the tilting levers and causes the rocking levers to raise the brush mechanism; and when the same has reached the position as shown by the solid lines, the ratchet mechanism is again operated, advancing the next row of bottles in alinement with the brushes.

The mechanism is so arranged and operated that while the brush is contacting with one row or series of bottles, a new supply of bottles is being provided in the containers from the endless conveyer, and the row of bottles which has just left the brushes is removed from their position by the operator. By this arrangement any and

all foreign substances which may cling to the outer surface of the bottles are removed by the revolving brushes.

Having thus fully described my invention, what I claim as new and desire to have secured to me by the grant of Letters Patent, is:

1. A bottle cleaning and brushing machine comprising a frame; an endless conveyer supported in said frame; rows of bottle holders supported in the conveyer and located at intervals apart; a plurality of hoppers located in the frame beneath the endless conveyer and corresponding in number with the bottle holders of each row; spouts connected to the hoppers; a corresponding number of containers supported in the frame and arranged to communicate with the bottom ends of the spouts; a ratchet mechanism for advancing the containers step by step; a revolving brush mechanism supported by the frame and arranged to be lowered and brought in contact with the projecting ends of the bottles supported in the containers; and means for operating the brush mechanism alternately with the operation of the containers, substantially as specified.

2. A bottle cleaning and brushing machine comprising a frame; an endless conveyer supported in said frame; rows of bottle holders supported in the conveyer and located at intervals apart; a plurality of hoppers located in the frame beneath the endless conveyer and corresponding in number with the bottle holders of each row; spouts connected to the hoppers; a corresponding number of containers supported in the frame and arranged to communicate with the bottom ends of the spouts; a ratchet mechanism for advancing the containers step by step; a revolving brush mechanism supported by the frame and arranged to be lowered and brought in contact with the projecting ends of the bottles supported in the containers; means for operating the brush mechanism alternately with the advancement of the containers; a pair of rocking levers communicating with the brush mechanism; and cams for operating the rocking levers to raise and lower the brush while the containers remain stationary, substantially as specified.

3. A bottle cleaning and brushing machine comprising an endless conveyer, holders carried by the endless conveyer, a plurality of containers to be advanced step by step, chutes intermediate the endless conveyer and containers for guiding the bottles, a pair of oppositely revolving brushes for contacting with the outer surface of the bottles projecting beyond the containers, and means for raising and lowering the brushes and operating the containers alternately, substantially as specified.

4. A bottle cleaning and brushing machine comprising a frame, an endless conveyer operating therein, holders carried by the conveyer, an endless sprocket chain
5 revolubly mounted in said frame, a plurality of bottle holders carried by the endless chain, a plurality of spouts located intermediate the endless conveyer and endless sprocket chain, said spouts guiding the bottles from the conveyer to the bottle holders,
10 a ratchet mechanism operating the endless chain advancing the bottle holder step by step, a pair of oppositely rotating brushes located above the bottle holders, and means
15 for raising and lowering the brushes to contact with the projecting portion of the bottles located in the holders alternately with the movement of the bottle holders, substantially as specified.
- 20 5. A bottle cleaning and brushing machine comprising a frame, an endless conveyer operating therein, holders carried by the conveyer, an endless sprocket chain revolubly mounted in said frame, a plurality of

bottle holders carried by the endless chain, 25
a plurality of spouts located intermediate the endless conveyer and endless sprocket chain, said spouts guiding the bottles from the conveyer to the bottle holders, a ratchet mechanism operating the 30
endless chain advancing the bottle holder step by step, a pair of oppositely rotating brushes located above the bottle holders, means for raising and lowering the brushes to contact with the projecting portion of the 35
bottles located in the holders alternately with the movement of the bottle holders, and means for adjusting the ratchet mechanism to regulate the step movement of the bottle holders, substantially as specified. 40

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

AUGUST BERBLINGER.

Witnesses:

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WALTER C. STEIN.