April 5, 1932. C. H. LOEW 1,852,322

SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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Fig. 1.

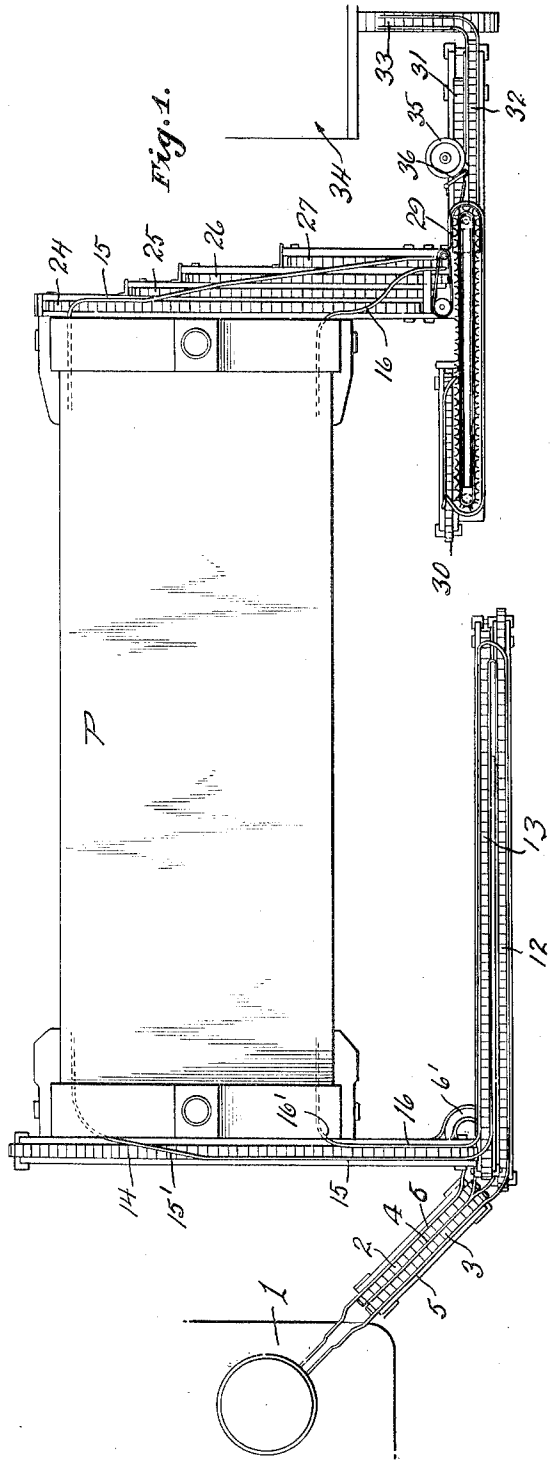
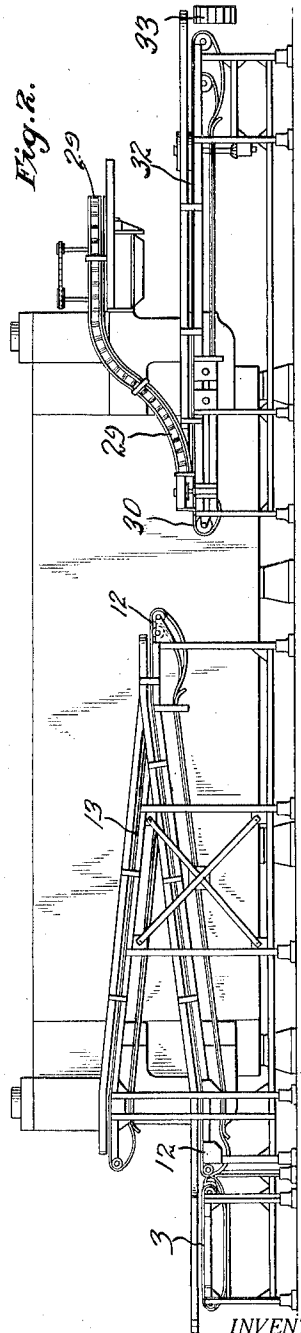


Fig. 2.



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SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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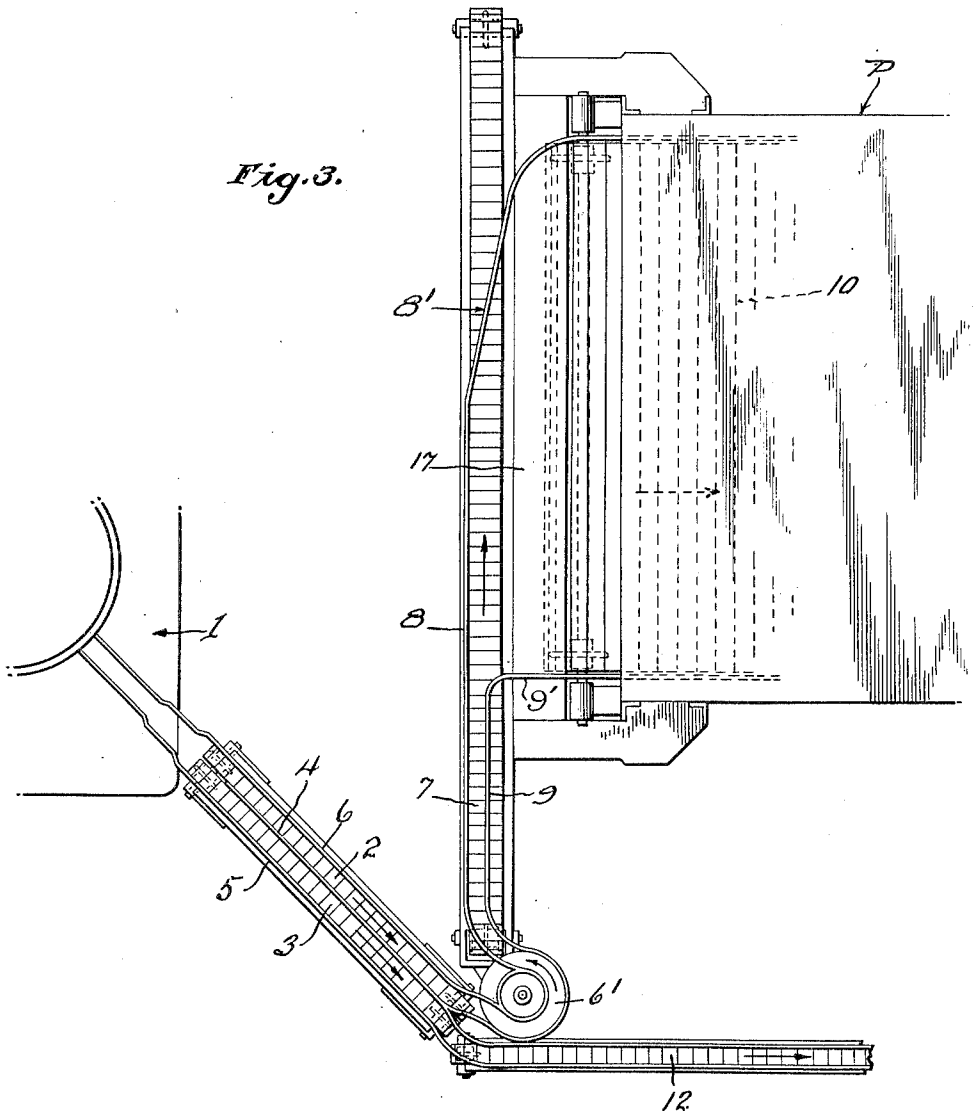
Fig. 3.



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SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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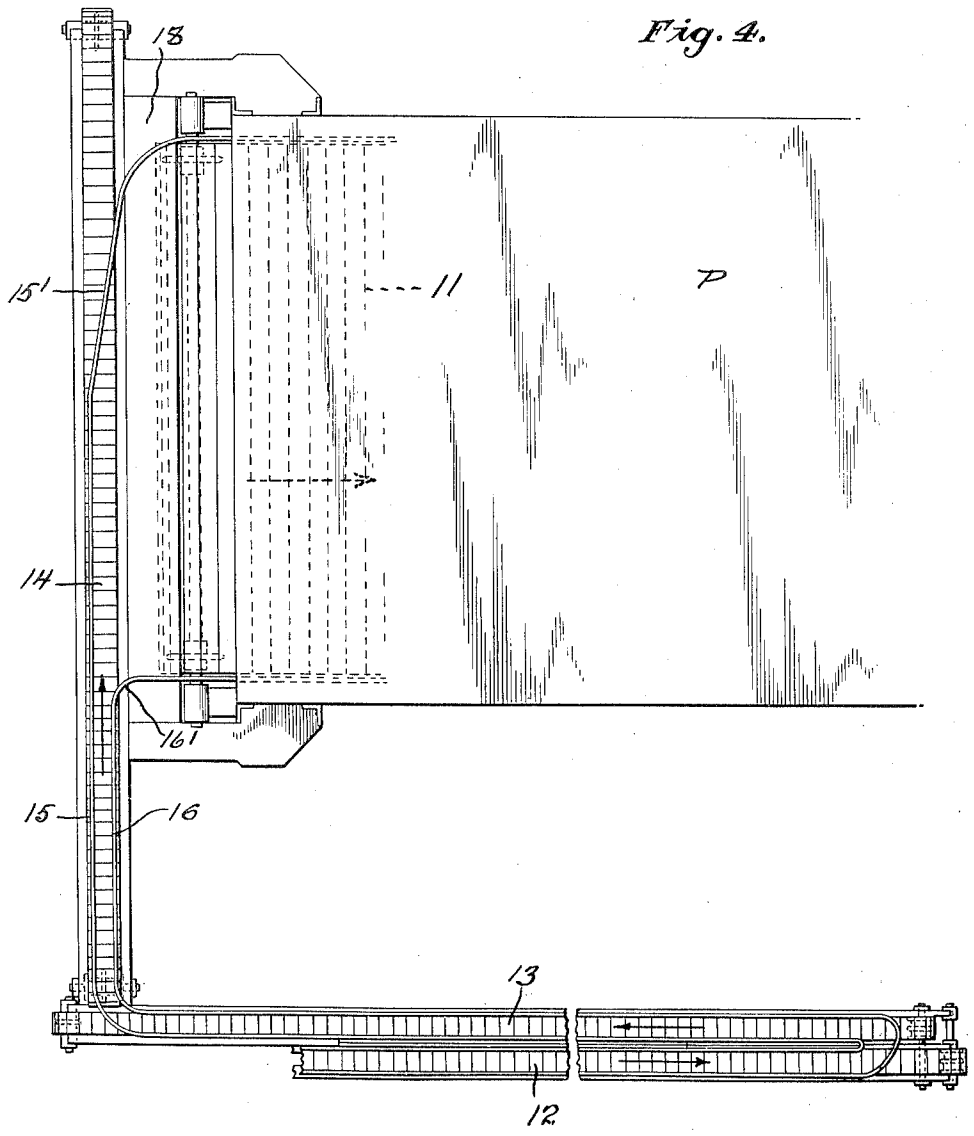
Fig. 4.



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SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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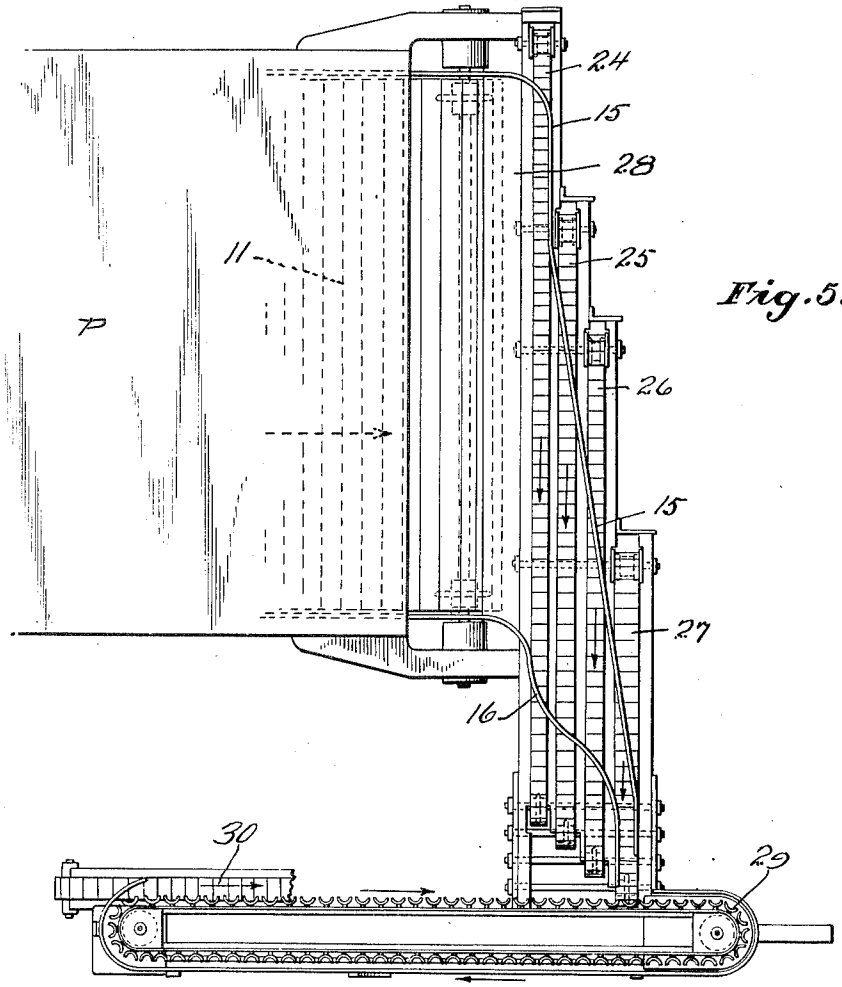

Fig. 5.

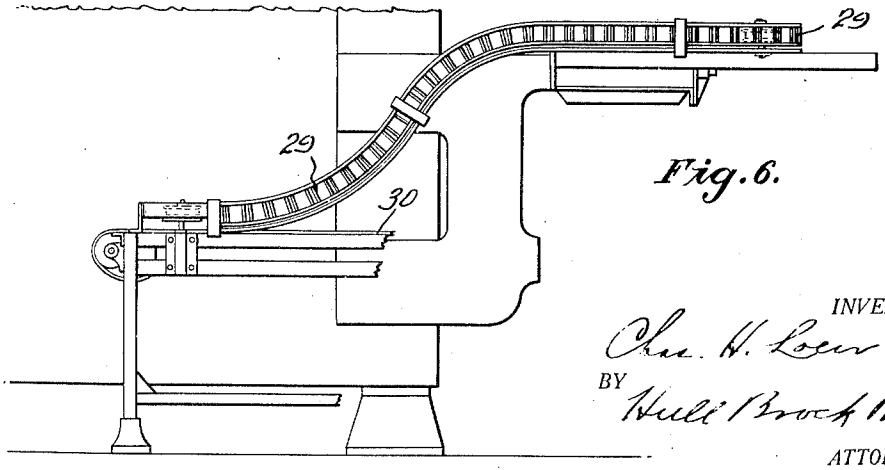

Fig. 6.

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SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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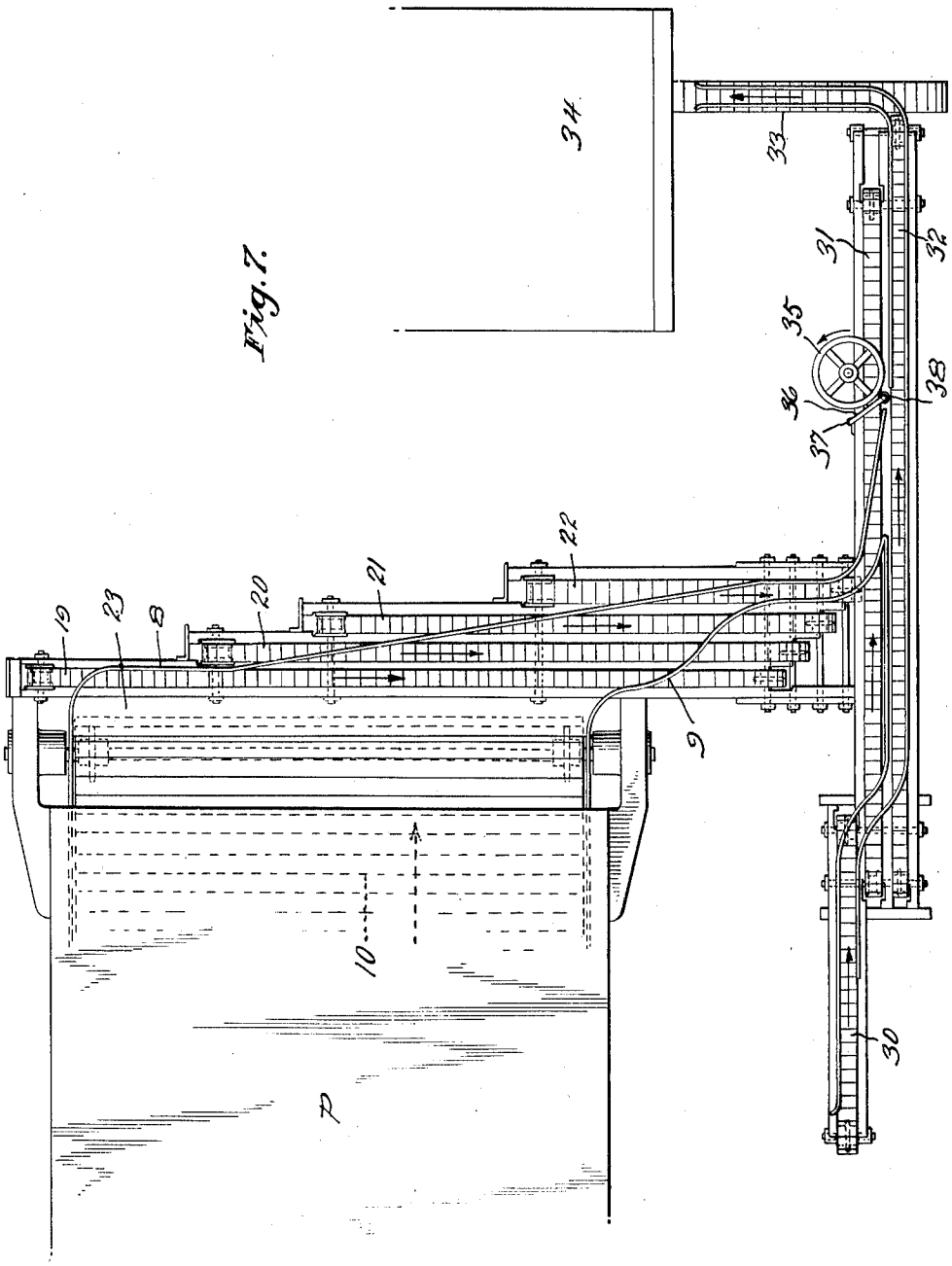
Fig. 7.



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SYSTEM AND APPARATUS FOR HANDLING BOTTLES

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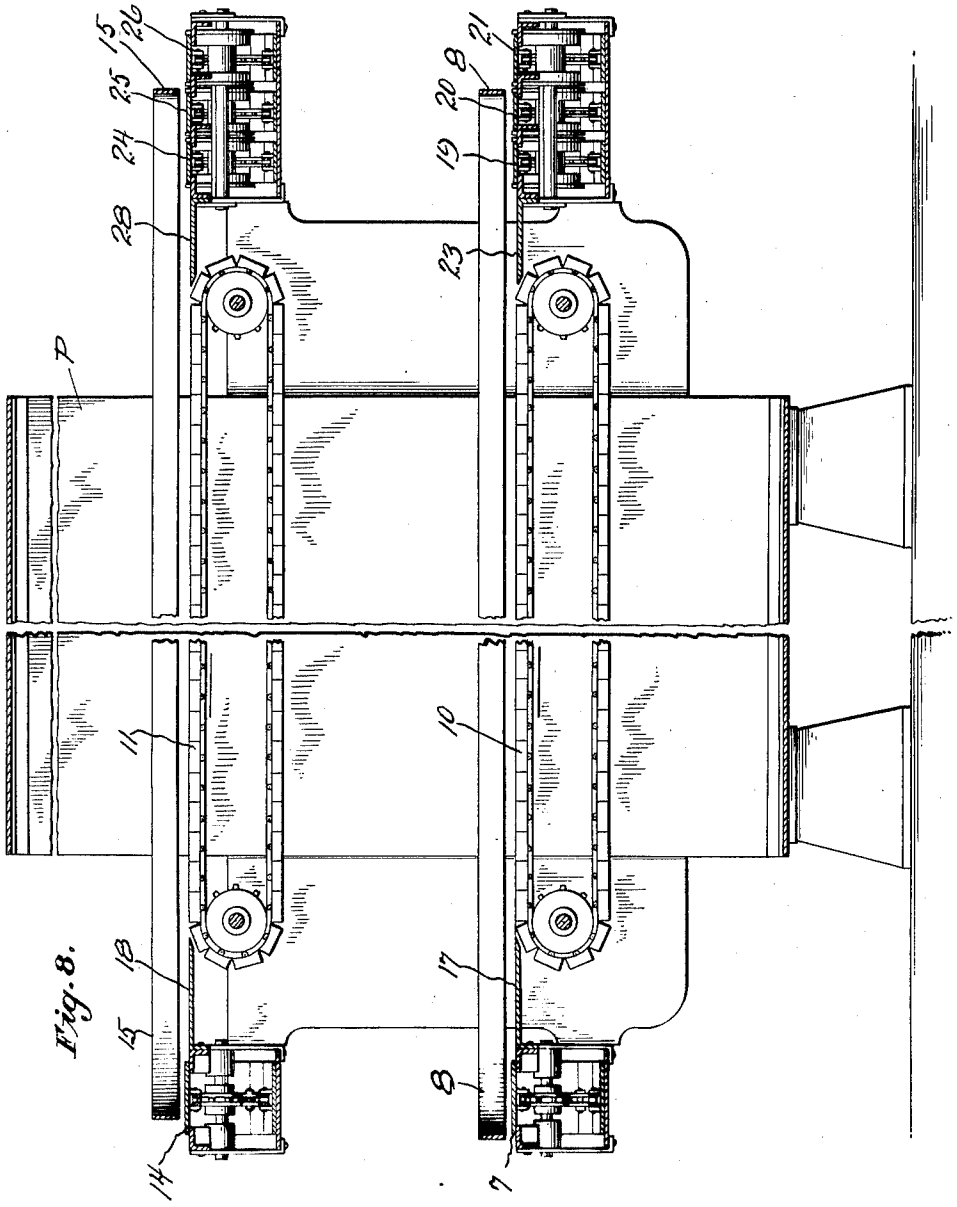

Fig. 8.

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UNITED STATES PATENT OFFICE

CHARLES H. LOEW, OF AVON LAKE, OHIO, ASSIGNOR TO LIQUID CARBONIC CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

SYSTEM AND APPARATUS FOR HANDLING BOTTLES

Application filed March 1, 1928. Serial No. 258,259.

This invention relates to a system and apparatus for conveying a plurality of filled bottles, or other receptacles, from a capping machine through a pasteurizer and thence removing the bottles or receptacles from the pasteurizer and delivering the same to a labeling machine in single file.

The main object of the invention is to provide a system and apparatus of the character described by means of which a quantity of liquid, such as beer, near beer, milk, or any beverage containing milk, may be bottled, pasteurized and labeled in a continuous operation, all of the above operations being accomplished with a minimum loss of time and by automatic machinery.

Another object of the invention is to provide a system and apparatus of the character described by means of which a plurality of tiers of filled receptacles may be simultaneously passed through a pasteurizer whereby a given size pasteurizer may be operated continuously and at maximum efficiency.

Another object of the invention is to provide a system and apparatus of the purpose set forth, which apparatus is simple and dependable in operation and will occupy a minimum amount of floor space and yet handle a maximum number of receptacles in a given period.

Further and more limited objects of the invention will appear as the description proceeds and by reference to the accompanying drawings in which Fig. 1 is a top plan view showing the general layout of my system and apparatus; Fig. 2 is a side elevation of the same; Fig. 3 is a fragmentary top plan view showing the mechanism for feeding the bottles into the lower tier of the pasteurizer; Fig. 4 is a top plan view similar to Fig. 3 showing the mechanism for feeding the bottles into the upper tier of the pasteurizer; Fig. 5 is a top plan view showing the mechanism for removing the bottles from the lower tier of the pasteurizer; Fig. 6 is a fragmentary view in side elevation of the mechanism illustrated in Fig. 5; Fig. 7 is a top plan view of the mechanism for removing the bottles from the lower tier of the pasteurizer and also illustrating the mechanism for delivering the bottles to the labeling machine; and Fig. 8 is a vertical sectional view of the pasteurizer showing the mechanism for delivering the bottles therethrough in a plurality of superposed tiers.

Referring now to the drawings, Fig. 1 illustrates the general plan or layout of my system and apparatus. The bottles are filled by any suitable mechanism (not shown) and are delivered to the capping machine 1 where they are hermetically sealed. Leading from the capping machine are a pair of endless conveyors 2 and 3. The bottles are delivered from the capping machine onto the conveyors 2 and 3 in double file. A rail 4 separates the two files and guide rails 5 and 6 are disposed along the outside edges of the conveyors. The conveyor 2 delivers onto a rotary transfer plate 6′ which receives the bottles and delivers the same onto an endless conveyor 7. Disposed along the opposite sides of the conveyor 7 are guide rails 8 and 9 which serve to hold the bottles in upright position. The guide rail 8 is bent inwardly as shown at 8′ and extends across the conveyor 7 at an angle thereto, the purpose of which will hereinafter appear. The guide rail 9 is bent inwardly as shown at 9′ and both guide rails preferably extend through the pasteurizer. Disposed adjacent the conveyor 7 and with its longitudinal axis at right angles thereto is a pasteurizer designated generally by the reference character P. Arranged within the pasteurizer P are a pair of superposed endless conveyors 10 and 11 which extend longitudinally through the pasteurizer and operate in a manner to be hereinafter described. The conveyor 3 delivers onto an upwardly inclined conveyor 12, and disposed adjacent the delivery end of conveyor 12 is another upwardly inclined conveyor 13 which travels in the direction of the arrow in Fig. 4 and onto which the conveyor 12 delivers. Disposed adjacent the delivery end of the conveyor 13 and at right angles thereto is another conveyor 14 which is arranged above the conveyor 7. The conveyor 14 is provided with guide rails 15 and 16 on opposite sides thereof and the guide rail 15 is bent inwardly as

shown at 15′ and extends across the conveyor 14 at an angle thereto and thence through the pasteurizer. The guide rail 16 is also bent inwardly as shown at 16′ and leads into the opposite side of the pasteurizer. By an inspection of Fig. 8, it will be seen that the conveyors 7 and 14 are disposed one above the other. Disposed between the conveyor 7 and the conveyor 10 is a dead plate 17 and disposed between the conveyor 14 and the conveyor 11 is a dead plate 18. The bottles on the conveyor 7 are directed onto the dead plate 17 by means of the guide rail 8 and the succeeding bottles force the forward bottles onto the conveyor 10. In a like manner the bottles on the conveyor 14 are directed onto the dead plate 18 by the guide rail 15 and the succeeding bottles force the forward bottles onto the conveyor 11. The conveyors 7 and 14 move considerably faster than the conveyors 10 and 11 so that the conveyors 10 and 11 are kept substantially filled with bottles. The conveyors 10 and 11 are driven at a very slow speed so that the contents of the bottles are pasteurized while passing through the pasteurizer.

Arranged at the delivery end of the pasteurizer P are a plurality of conveyors 19, 20, 21 and 22 and disposed between these conveyors and the conveyor 10 is a dead plate 23 onto which the bottles from the conveyor 10 are delivered. Arranged at the delivery end of the pasteurizer P and above the conveyors 19, 20, 21 and 22 are a plurality of conveyors 24, 25, 26 and 27 and disposed between the conveyor 11 and the last mentioned conveyor is a dead plate 28 onto which the bottles from the conveyor 11 are delivered. The guide rails 8 and 9 extend all the way through the pasteurizer and across the conveyors 19, 20, 21 and 22 at an angle thereto as most clearly shown in Fig. 7. Likewise the guide rails 15 and 16 extend through the pasteurizer and across the conveyors 24, 25, 26 and 27 as shown most clearly in Fig. 5. The conveyors 19, 20, 21 and 22 are driven at different speeds, the conveyor 19 being driven at the slowest speed and the conveyor 22 being driven at the fastest speed. Likewise the conveyors 24, 25, 26 and 27 are driven at different speeds, the conveyor 24 being driven at the slowest speed and the conveyor 27 being driven at the fastest speed. Disposed adjacent the delivery end of the conveyor 27 is another conveyor 29 onto which the bottles from the conveyor 27 are delivered. The conveyor 29 travels in the direction of the arrow shown in Fig. 5 and delivers the bottles onto another conveyor 30 which travels in the direction of the arrows shown in Fig. 5. The bottles on the conveyor 11 are delivered onto the dead plate 28 and the succeeding bottles force the forward bottles onto the conveyors 24, 25, 26 and 27 in succession. Disposed adjacent the delivery end of the conveyor 22 are a pair of conveyors 31 and 32 both of which travel in the direction of the arrows shown in Fig. 7. The guide rails 15 and 16 extend across the conveyors 31 and 32 at an angle thereto and serve to guide the bottles first onto the conveyor 31 and thence onto the conveyor 32. The delivery end of the conveyor 30 is disposed adjacent one end of the conveyors 31 and 32 and the guide rails serve to direct the bottles from the conveyor 30 first onto the conveyor 31 and then onto the conveyor 32.

It will thus be seen that all of the bottles from the pasteurizer are finally delivered onto the conveyor 32 in single file. Disposed adjacent the end of the conveyor 32 is another conveyor 33 onto which the bottles from the conveyor 32 are delivered. The conveyor 33 delivers the bottles into the labeling machine 34 in single file where the labeling operation is performed and after which the bottles are packed in suitable containers. Disposed adjacent the conveyor 31 and projecting thereover is a wheel 35 which is driven in any suitable manner and which projects over the conveyor 31. Disposed adjacent this wheel is a lever 36 which is pivotally secured at one end as shown at 37 and the opposite end of which is provided with a roller 38. This roller 38 projects over and in close proximity to the conveyor 32 and should there be a jamming of the bottles at this point, the bottles will force the lever 38 into engagement with the wheel 35 whereupon the roller will be turned and tend to move the bottles onto the conveyor 32 in succession and thus break up the jam.

It will thus be seen that bottles are delivered from the capping machine in double file and thence separated, one file going to the lower conveyor of the pasteurizer and the other file going to the upper conveyor of the pasteurizer. The conveyors 7 and 14 are driven at a rapid speed in comparison to the movement of the conveyors 10 and 11 with the result that the conveyors 10 and 11 are kept substantially filled with bottles. The bottles are carried slowly through the pasteurizer by means of the conveyors 10 and 11 and are delivered onto the dead plates 23 and 28 from whence the succeeding bottles push the forward bottles onto the conveyors for removing the same. Due to the fact that the conveyors 19, 20, 21 and 22 are moving at different speeds and due to the arrangement of the guide rails 8 and 9, it will be seen that the bottles are removed from the lower conveyor 10 in single file and delivered onto the conveyor 30. The bottles from the upper conveyor 11 are delivered onto the conveyors 24, 25, 26 and 27 and the arrangement of the guide rails 15 and 16 causes the bottles to be delivered onto the conveyor 32 in single file. The conveyor 30 also delivers onto the conveyor 32 which moves at a comparatively high speed and delivers onto the conveyor 33

which delivers the bottles into the labeling machine in single file.

The specific construction of the conveyors as well as the specific driving mechanism may be modified without departing from the spirit of my invention and the details of these mechanisms form no part of this invention. Various other changes may be made in the details of my construction without departing from the spirit of my invention and I therefore wish my invention to be limited only in accordance with the scope of the appended claims.

It will now be clear that I have provided a system and apparatus of the character described which will accomplish the objects of the invention as hereinbefore stated.

Having thus described my invention, what I claim is:—

1. A container handling system adapted to convey containers from a sealing machine through a heating apparatus to a labeling machine, said system including a plurality of narrow conveyors moving at a relatively fast speed, a plurality of considerably wider conveyors moving through said heating apparatus at a relatively slow speed and to which said first conveyors deliver whereby to reduce the speed of said containers moving through said heating apparatus, the said wider conveyors being disposed in different planes, and a plurality of conveyors moving at a relatively high speed for removing the containers from said slow speed conveyors, said last mentioned conveyors being of substantially the same capacity as said slow speed conveyors and delivering to said labeling machine in single file.

2. A conveyor system for conveying containers from a capping machine through a heating apparatus and to a labeling machine, said system including a plurality of narrow conveyors moving at a relatively high speed and a plurality of conveyors arranged within the heating apparatus and disposed in different planes and to which said high speed conveyors deliver, the conveyors in said heating apparatus being considerably wider than said first conveyors and moving at a relatively low speed, a plurality of narrow conveyors moving at a relatively high speed for removing the containers from the heating apparatus and delivering the same to the labeling machine in single file, all of the above operations being accomplished in a continuous operation.

In testimony whereof, I hereunto affix my signature.

CHARLES H. LOEW.