

May 12, 1942.

F. C. HAMILTON ET AL

2,282,576

BOTTLING MACHINE

Filed March 4, 1939

3 Sheets-Sheet 1

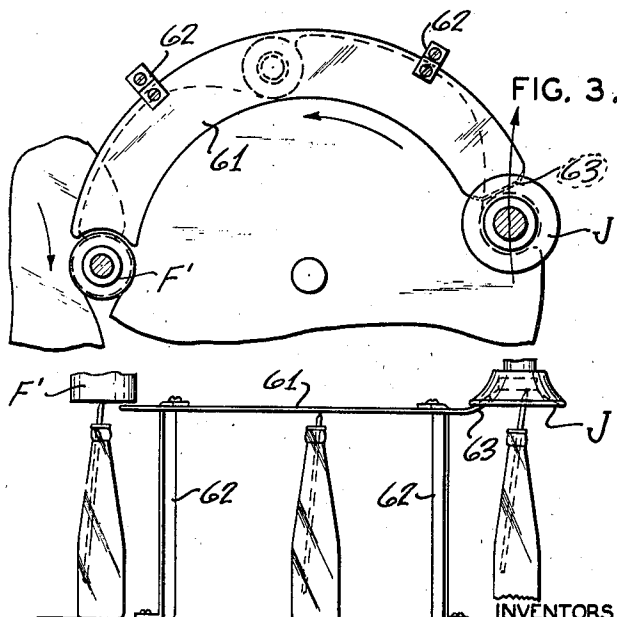
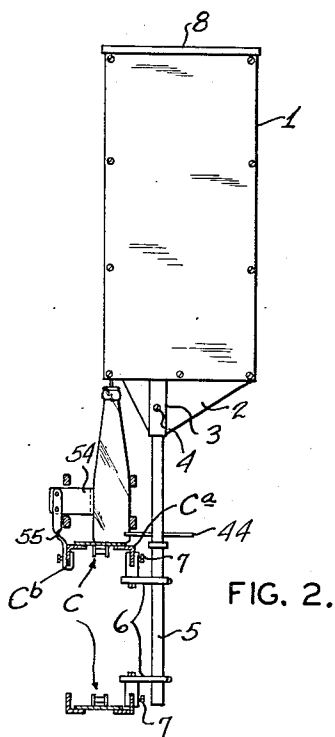
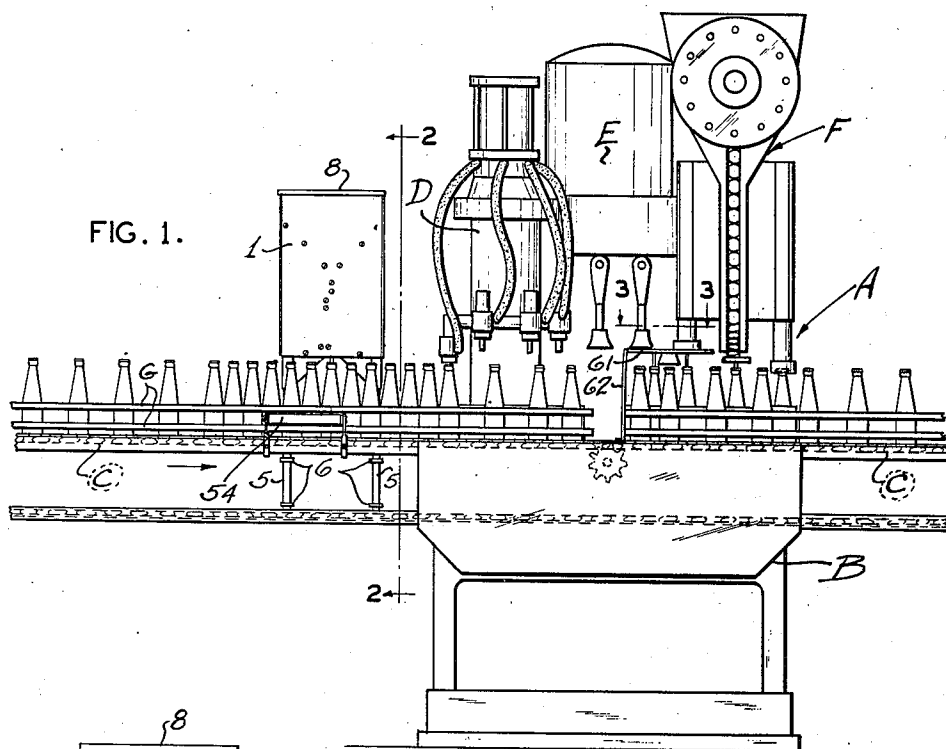


FIG. 4.

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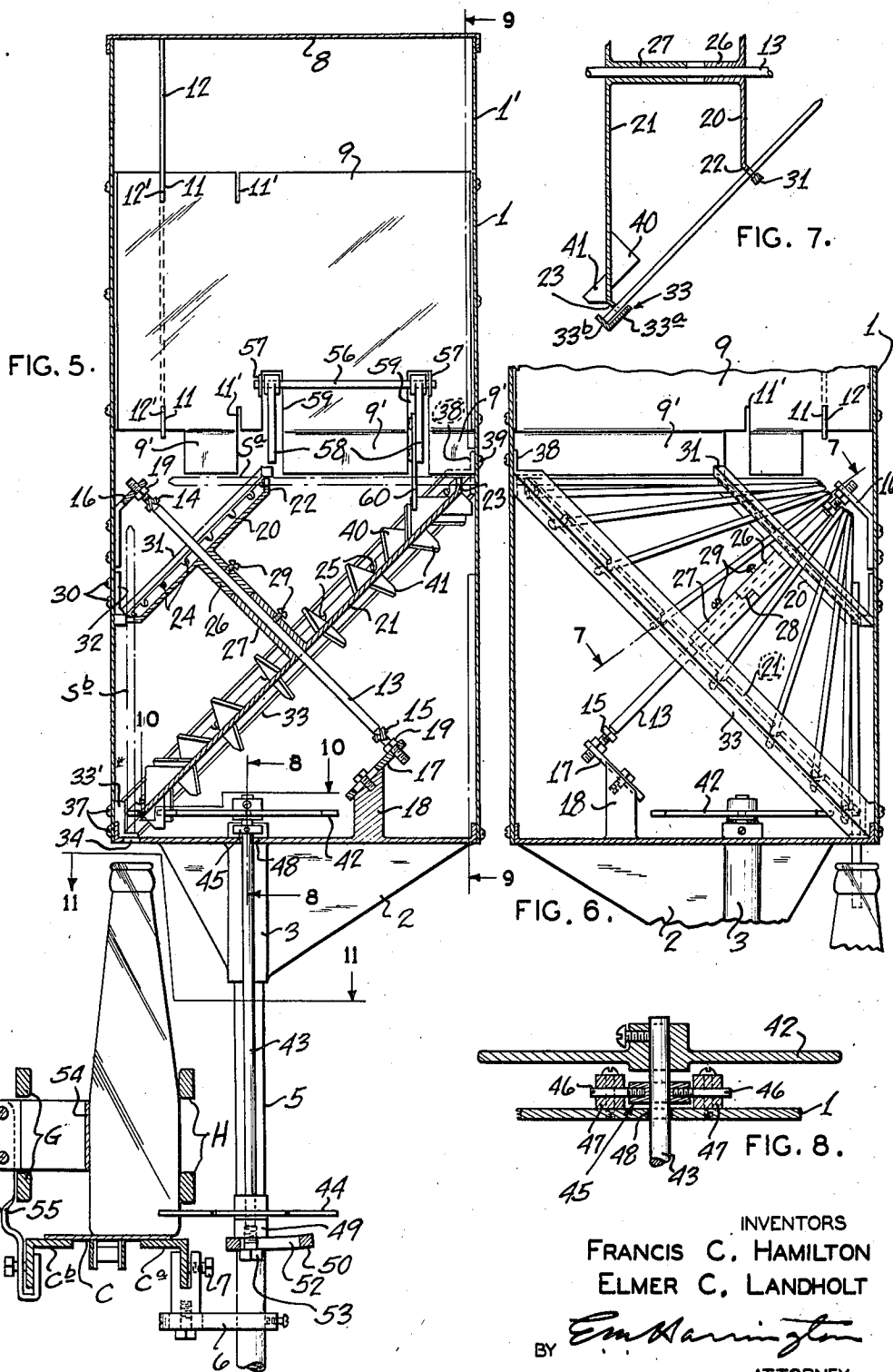
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

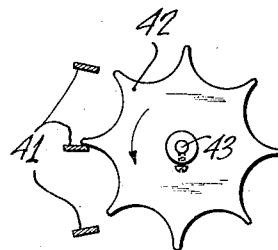
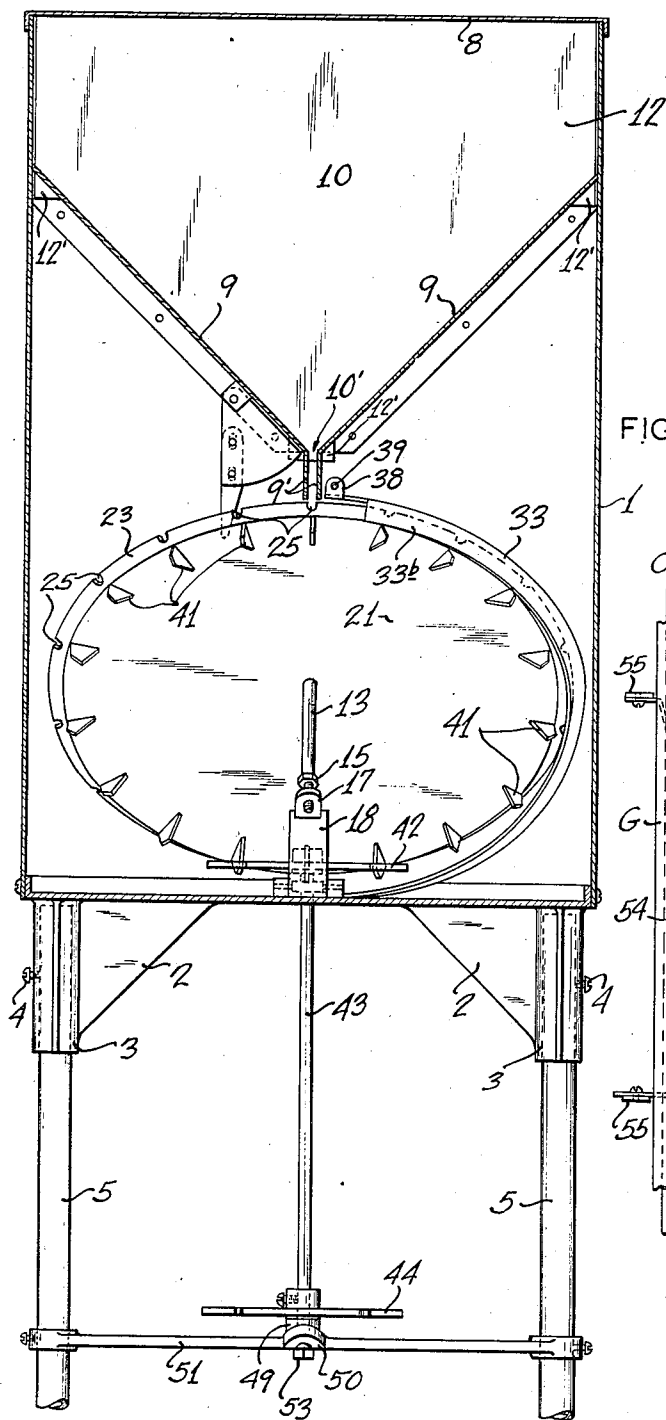


FIG. 9.

FIG. 10.

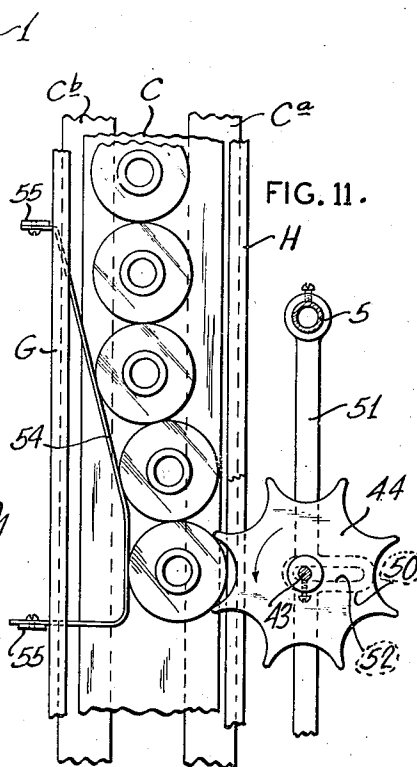


FIG. 11.

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2,282,576

BOTTLING MACHINE

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Application March 4, 1939, Serial No. 259,756

8 Claims. (Cl. 226—2)

This invention relates generally to bottling machines and more specifically to bottling machines adapted for use in bottling beverages in which sippers are sealed within the bottles containing the beverage, the predominant object of the invention being to provide a bottling machine which includes as parts thereof, means for feeding sippers to bottles in which beverages are being bottled with the aid of the machine, and means for offsetting the tendency of the sippers to float upwardly in the beverage within the bottles as said bottles approach the capping mechanism of the bottling machine.

As is quite generally known to persons familiar with such matters bottling machines, of the type to which this invention relates, ordinarily include conveyor means by which lines of bottles are conducted through the machines, such bottles receiving amounts of syrup, water, and gas as they pass into operative relation with respect to certain parts of the machines, and the bottles being capped as said bottles pass into operative relation with respect to the capping mechanism of the machines. The improved bottling machine disclosed herein includes means for automatically dropping a sipper in each bottle as it passes the position of the sipper feeding mechanism of the machine, and also, because the subsequent introduction of liquid into the bottles tends to cause the sippers so introduced into the bottles by the sipper feeding means to float upwardly, the improved machine includes baffle means which controls upward floating movement of the sipper of each bottle as said bottle approaches the capping mechanism of the machine, and thereby assures passage of the sipper beneath the cap to be applied to the bottle by said capping mechanism.

Fig. 1 is a front elevation of a bottling machine constructed and arranged in accordance with this invention.

Fig. 2 is an enlarged vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged horizontal section taken on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary elevation of the parts illustrated in Fig. 3.

Fig. 5 is a vertical section of the sipper feeding mechanism of the improved bottling machine, together with parts of the bottle conveyor means of the machine.

Fig. 6 is a fragmentary vertical section of the sipper feeding mechanism of the machine showing the manner in which sippers to be fed to bottles are carried from a horizontal position to

a vertical position for discharge into the bottles.

Fig. 7 is an enlarged section on line 7—7 of Fig. 6.

Fig. 8 is an enlarged section on line 8—8 of Fig. 5.

Fig. 9 is an enlarged vertical section on line 9—9 of Fig. 5.

Fig. 10 is a horizontal section on line 10—10 of Fig. 5.

Fig. 11 is a horizontal section on line 11—11 of Fig. 5.

In the drawings, wherein is shown for the purpose of illustration, merely, one embodiment of the invention, A designates in Fig. 1 a bottling machine of conventional construction and arrangement. The bottling machine A includes a base B which aids in supporting the mechanism of the bottling machine, said mechanism including a conveyor C by which bottles to be filled and capped by the bottling machine are conducted through the machine. The bottling machine A includes, also, means D which serves to introduce syrup into the bottles during their passage through the machine, means E for introducing water into the bottles, means for carbonating the contents of the bottles when this is desired, and means F for capping the bottles after they have been filled. Due to the fact that the construction and mode of operation of bottling machines of the type to which this invention relates are well known to persons skilled in the art, it will not be necessary to describe the bottling machine A and its mode of operation in detail beyond a point where a complete understanding of the present invention may be had, such invention involving associating with a conventional bottling machine, means for feeding sippers one at a time to bottles as said bottles move successively with respect to the position of the sipper feeding means, and means for preventing excessive upward floating movement of the sippers in the bottles as said bottles approach the capping mechanism of the bottling machine so that said sippers may move beneath said capping mechanism.

Referring now to the sipper feeding means of the invention 1 designates a housing which is provided at its bottom with a pair of brackets 2, each of said brackets being provided with a tubular socket 3. Extended into the sockets 3 and fixed therein by means of set screws 4 are pipes 5, said pipes 5 each having fixed thereto a pair of brackets 6 which are secured by set screws 7 to an angle member C^a which constitutes a part of the conveyor means of the bottling machine A

(Figs. 2 and 5). Thus the housing 1 of the sipper feeding means is secured to and is supported by said angle member C^a of the bottling machine A. The housing 1 is provided with a removable cover 8, and in the upper portion of the housing a pair of convergent walls 9 are secured to the walls of the housing as shown to the best advantage in Figs. 5 and 9. The space within the housing 1 above the walls 9 is constituted a hopper 10 adapted to receive a supply of sippers and the convergent walls 9 provide the hopper 10 with the conventional hopper bottom. The bottom of the hopper 10 is provided with an elongated opening 10' which is defined by vertically extended, spaced apart, flanges 9' formed on the walls 9. The convergent walls 9 are provided with sets of notches 11 and 11' which are adapted to receive angular portions 12' of a partition 12. The partition 12 may be supported in the set of notches 11 to space said partition from the wall 1' of the housing 1 to provide for the reception between said partition and said wall 1' of sippers of a certain length, eight inches, for instance. Also, when desired, the partition 12 may be shifted to a position where it is supported in the set of notches 11' to provide for the reception of shorter sippers, six inches in length, for instance.

Arranged within the lower portion of the housing 1 at an angle of approximately forty-five degrees with respect to the vertical front and rear walls of said housing is a shaft 13, said shaft being provided with conical bearing portions at its opposite ends which are received in similarly shaped cavities formed in bearing members 14 and 15. The bearing member 14 is screwthreadedly supported by a bracket 16 which is fixed to the front wall of the housing 1, while the bearing 15 is screwthreadedly supported by an element 17 that is adjustably secured to an extension 18 projected upwardly from the bottom wall of the housing 1. Because the bearing members 14 and 15 are screwthreadedly supported by the bracket 16 and element 17 they may be adjusted longitudinally of the axis of the shaft 13, jamb nuts 19 being provided to lock said bearing members in positions to which they may be adjusted. Also because the element 17 is attached to the extension 18 through the instrumentality of a bolt and slot connection, said element and the bearing member 15, may be adjusted laterally of the axis of the shaft 13.

Fixedly mounted on the shaft 13 is a disk 20 and fixedly mounted on said shaft in spaced relation with respect to said disk 20 is disk 21 which is of substantially larger diameter than the disk 20. The disk 20 is provided with an angularly extended edge portion 22, the angle of said edge portion 22 being approximately forty five degrees with respect to the plane of the disk 20. Likewise the disk 21 is provided with an edge portion 23 which is extended at an angle of approximately forty-five degrees relative to the plane of said disk. The angular edge portions 22 and 23 of the disks 21 and 22 are provided with notches 24 and 25, and corresponding notches of the edge portions of the disks are alined with each other so that if lines were drawn along the axes of the various alined notches of the disks 21 and 22 a substantially conical appearance would be produced by said lines in association with the disks. The disks 21 and 22 are provided with sleeve portions 26 and 27 which embrace the shaft 13, and these sleeves are provided with offset, engaging, inner end portions as indicated at 28 in Fig. 6. Because of the presence of the offset end por-

tions 28 of the sleeves 26 and 27 proper alinement of the notches 24 and 25 in the angular end portions of the disks 20 and 21 is assured when said offset end portions are properly assembled. When the offset end portions 28 of the sleeves 26 and 27 of the disks are properly assembled to aline the notches 24 and 25 as explained, the sleeves and disk are secured to the shaft 13 through the use of set screws 29 which extend through apertures formed in the sleeve portions and engage said shaft.

Secured to the front wall of the housing 1 by means of suitable fastening devices 30 is an arcuate bar 31 which is provided with an extension 32 at one end into which the fastening devices 30 are extended to secure the arcuate bar to the front wall of the housing. The arcuate bar 31 describes an approximate half circle, one end of the bar being located immediately adjacent to the opening 10' previously referred herein, and said arcuate bar being so related to the disk 20 that said bar follows the outer edge of the angular edge portion 22 of said disk 20 with only a slight clearance space between said outer edge of said angular edge portion of the disk and an adjacent face of the arcuate bar (Figs. 5 and 7). Additionally the disk 21 has associated therewith an arcuate bar 33 which is of angular cross-section as shown to the best advantage in Fig. 7. The arcuate angle bar 33 describes an approximate half circle with one end thereof located adjacent to the opening 10' in the bottom of the hopper 10 and with the opposite end of said bar located immediately adjacent to an aperture 34 formed through the bottom wall of the housing 1 (Fig. 5). The arcuate angular bar 33 follows the periphery of the disk 21, the leg 33^a of said bar being arranged with respect to the disk 21 as shown in Fig. 7 with only a slight clearance space between said leg 33^a and the outer edge of the angular edge portion of the disk. The other leg 33^b of the arcuate bar 33 is disposed outwardly of the angular edge portion 23 of the disk 21 and in substantial parallelism therewith. At the end of the arcuate bar 33 which is located adjacent to the aperture 34 in the bottom wall of the housing 1 said bar is provided with a portion 33' into which suitable fastening devices 37 are extended for securing the bar to the front wall of the housing 1, and at the opposite end of said bar an ear 38 is provided thereon which receives a fastening device 39 that secures said opposite end portion of the bar to the rear wall of the housing 1.

Formed on the disk 21 at one face thereof is a plurality of circumferentially spaced outstanding wings 40, and formed on said disk 21 at its opposite face is a plurality of similar circumferentially spaced, outstanding wings 41. The wings 41 are adapted to be engaged by a star wheel 42 which is fixedly supported at the upper end of a shaft 43, said shaft 43 having fixedly secured thereto adjacent to its lower end a similar star wheel 44. The shaft 43 is supported for swinging movement at its lower end, there being a bearing 45 for said shaft adjacent to the upper end thereof which permits such swinging movement. The bearing 45 includes a collar through which the shaft 43 extends for rotation with respect to said collar, and this collar is provided with pins 46 which extend in opposite directions from said collar and are rotatably supported in blocks 47 which are secured to the bottom wall of the housing 1. The shaft 43 extends through an elongated opening 48 formed in the bottom

wall of the housing 1 and the lower end of said shaft is extended into a bearing member 49. The bearing member 49 is supported by an elongated and curved portion 50 of a member 51 which is secured at its opposite ends to the spaced pipes 5 that support the housing 1 as shown in Fig. 9, said elongated and curved portion 50 of said member 51 having a slot 52 formed therein through which is extended the shank of a bolt 53 which may be drawn up to clamp the bearing member 49 in various positions to which it may be adjusted when the lower end of the shaft 43 is moved longitudinally of said elongated and curved portion 50.

Included as parts of the bottling machine A is a pair of vertically spaced guide bars G which are disposed adjacent to and above the outer edge of the conveyor C of the bottling machine, and a pair of similar vertically spaced guide bars H which are disposed adjacent to and above the inner edge of said conveyor C of the bottling machine (Figs. 2, 5, and 11). The function performed by the guide bars G and H is to prevent accidental displacement of bottles from the conveyor as said bottles are moved by said conveyor. In order that a part of the present invention will perform its intended function to better advantage a guide member 54 is provided. This guide member is shaped in plan as shown in Fig. 11 and is attached at its opposite ends to arms 55 which are secured, as shown in Fig. 5, to the angle member C^b which forms a part of the conveyor of the bottle machine. The guide member 54 serves to force the bottles moving with the conveyor C of the bottling machine toward the guide bars H so that said bottles will successively engage the star wheel 44 at the lower end of the shaft 43 as shown in Figs. 2, 5, and 11 in a manner and for a purpose to be hereinafter set forth. The fact that the bottles successively engage the star wheel 44 indicates the reason for making the lower end of the shaft 43 swingable, as it is necessary to adjust said star wheel 44 relative to the conveyor C of the bottling machine so that it may be properly positioned for bottles of different diameters.

The hopper 10 receives a supply of sippers as has been previously mentioned herein, and to make sure that said sippers will be fed one at a time through the opening 10' at the bottom of the hopper means is provided for agitating the sippers in the lower portion of the hopper. The agitating means referred to includes a shaft 56 which is supported for rocking movement by a pair of bearing elements 57 (Figs. 5 and 9) which are extended outwardly from one of the inclined bottom walls 9 of the hopper 10. The shaft 56 has fixed thereto a pair of spaced segmental elements 58 which are swingable into and out of the lower portion of the hopper through slots 59 formed in the bottom wall 9 of the hopper that supports the shaft 56. One of the segmental elements 58 has secured thereto a downwardly extended arm 60, the lower end portion of which is in the path of travel of the wings 40 on the disk 21. As the disk 21 is rotated, as will presently be more fully explained, the wings 40 thereof successively contact with the lower end portion of the arm 60 whereby the lower portions of the segmental elements 58 will be moved through the slots 59 into the lower portion of the hopper. This will cause the sippers in the lower part of the hopper to be agitated thereby inducing said sippers at the proper time to move one

at a time through the discharge opening 10' of the hopper.

In the operation of a bottling machine having the improved sipper feeding means of the present invention associated therewith, the bottles to be filled and capped by the machine are conveyed by the conveyor C of the machine past the location of the sipper feeding means. As each bottle engages the star wheel 44 and continues its movement with the conveyor of the machine said star wheel is rotated a portion of a revolution, and the same rotation is imparted through the shaft 43 to the star wheel 42. When so rotated one of the projections of the star wheel 42 is in engagement with one of the wings 41 of the disk 21 and as a result thereof the structure comprised of the disk 21, shaft 43, and disk 20 will be subjected to rotary movement. Each time the disks 20 and 21 are rotated by engagement of a bottle with the star wheel 44 the angular edge portions of said disks move with respect to the discharge openings 10' of the hopper 10 a distance equal to the space between one aligned pair of notches 24—25 of said disks and the next succeeding pair of notches, and as each pair of notches 24—25 moves into register with the discharge opening of the hopper a sipper will fall through said discharge opening into the notches. The sippers so received in the various pairs of aligned notches are carried through a half circle by the intermittently moving disks 20 and 21 from the horizontal dotted line position of the sipper S^a in Fig. 5 to the vertical dotted line position of the sipper S^b in the same view. As the sippers are carried through a half circle as described they are prevented from falling from the notches in which they are carried by the bars 31 and 33, said sippers, as they approach the vertical position S^b riding on the leg 33^b of the bar 33. The bar 33 terminates at the location of the aperture 34 in the bottom wall of the housing 1 and as each sipper reaches the position of said aperture it falls therethrough into a bottle which is located with its mouth immediately beneath said aperture. Thus as each bottle moving with the conveyor of the machine engages the star wheel 44 a sipper will be received in a pair of aligned notches of the disks 20 and 21 and another sipper will drop through the aperture 34 into the bottle in engagement with said star wheel 44, the sippers in the lower portion of the hopper being agitated by the elements 58 each time a wing 40 of the disk 21 contacts with the arm 60.

After the sippers have been introduced into the bottles as described the bottles move on to the point in the operation of the machine where the syrup is introduced into the bottles, then to the point where water is introduced into the bottles, and then to the point where the bottles are capped. When water is introduced in the bottles during operation of the bottling machine there is a tendency for the sippers in said bottles to float upwardly in the fluid within the bottles, and if this tendency were not controlled the sippers might, in many cases at least, be extended upwardly to such extent that they would not pass under the capping mechanism of the bottling machine. In view of this situation the bottling machine A is provided with a baffle 61 which is in the form of a flat plate, curved as shown in Fig. 3, in accordance with the path of travel of the bottles. The baffle is supported by brackets 62 to which it is secured at the upper ends thereof, the brackets being fixed at their lower ends to a stationary part of the machine. As shown

in Figs. 3 and 4 the baffle 61 has an upwardly curved end portion 63 which is disposed at the charging head J of the bottling machine and as each bottle passes from said charging head the upper end of the sipper therein moves into engagement with said curved portion and is depressed thereby so that said upper end of the sipper may ride under the baffle during its movement from the charging head to the capping mechanism F. The baffle 61 terminates immediately adjacent to the head F' of the capping mechanism and as the sipper of each bottle passes out of contact with the baffle it moves beneath the head of the capping mechanism in such position that the cap being applied to the bottle will force the sipper down into the bottle as the capping mechanism applies the cap to the bottle.

From the foregoing it is plain that during the operation of the improved machine assembly disclosed herein a sipper is introduced into each bottle and the tendency of the buoyant sipper to float upwardly in the liquid introduced into the bottle is controlled so that the presence of the sipper in the bottles does not interfere with the operations of capping the bottles. Thus as each bottle leaves the machine it has a sipper sealed therein and ready for use when the cap of the bottle is removed.

We claim:

1. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure adapted to conduct the sipper from substantially horizontal positions to substantially vertical positions for introduction into the bottles, a hopper for delivering sippers to said rotary structure in substantially horizontal positions, and actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof.
2. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure adapted to conduct the sippers from substantially horizontal positions to substantially vertical positions for introduction into the bottles, a hopper for delivering sippers to said rotary structure in substantially horizontal positions, and actuating means for subjecting said rotary structure to intermittent rotary movement which is operated by contact of the moving bottles with a part thereof.
3. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure adapted to conduct the sippers from substantially horizontal positions to substantially vertical positions for introduction into the bottles, a hopper for delivering sippers to said rotary structure in substantially horizontal positions, actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof, and means for agitating sippers within said hopper.
4. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure comprising a shaft, a pair of spaced disks mounted on said shaft one of which is of greater diameter than the other, said disks having aligned notches formed in the edge portion thereof, a hopper for feeding sippers one at a time to aligned notches of said disks, said rotary structure being adapted to conduct said sippers from substantially horizontal positions in which said sippers are received from said hopper to substantially vertical positions for introduction into the bottles, and actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof.
5. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure comprising a shaft, a pair of spaced disks mounted on said shaft one of which is of greater diameter than the other, said disks having aligned notches formed in the edge portion thereof, a hopper for feeding sippers one at a time to aligned notches of said disks, said rotary structure being adapted to conduct said sippers from substantially horizontal positions in which said sippers are received from said hopper to substantially vertical positions for introduction into the bottles, and actuating means for subjecting said rotary structure to intermittent rotary movement which is operated by contact of the moving bottles with a part thereof.
6. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure comprising a shaft, a pair of spaced disks mounted on said shaft one of which is of greater diameter than the other, said disks having aligned notches formed in the edge portion thereof, a hopper for feeding sippers one at a time to aligned notches of said disks, said rotary structure being adapted to conduct said sippers from substantially horizontal positions in which said sippers are received from said hopper to substantially vertical positions for introduction into the bottles, elements for preventing unintended displacement of the sippers from said aligned notches, and actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof.
7. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure comprising a shaft, a pair of spaced disks mounted on said shaft one of which is of greater diameter than the other, said disks having aligned notches formed in the edge portion thereof, a hopper for feeding sippers one at a time to aligned notches of said disks, said rotary structure being adapted to conduct

said sippers from substantially horizontal positions in which said sippers are received from said hopper to substantially vertical positions for introduction into the bottles, curved elements for preventing unintended displacement of the sippers from said alined notches, and actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof.

8. A bottling machine including means for moving through the machine bottles in which fluid is to be bottled, and means for automatically introducing a sipper into each bottle moving through the bottling machine as said bottle passes a given point, said sipper introducing means including a rotary structure comprising a shaft, a pair of spaced disks mounted on said shaft one

of which is of greater diameter than the other, said disks having alined notches formed in the edge portion thereof, a hopper for feeding sippers one at a time to alined notches of said disks, said rotary structure being adapted to conduct said sippers from substantially horizontal positions in which said sippers are received from said hopper to substantially vertical positions for introduction into the bottles, elements for preventing unintended displacement of the sippers from said alined notches, means for agitating sippers in said hopper, and actuating means for subjecting said rotary structure to rotary movement which is operated by contact of the moving bottles with a part thereof.

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