

Sept. 28, 1943.

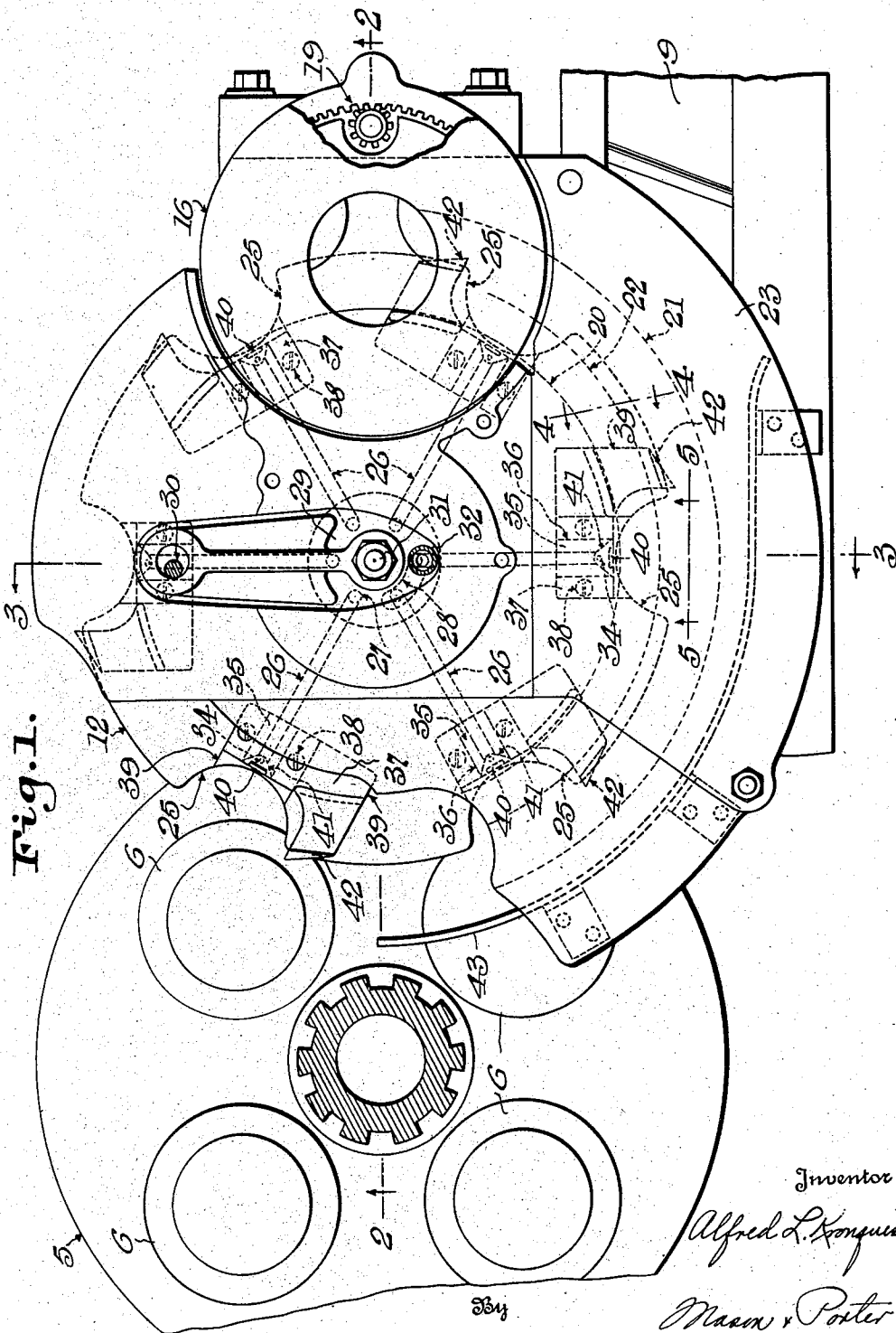
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2,330,598

FILLED CONTAINER GASSING APPARATUS

Filed Jan. 31, 1941

5 Sheets-Sheet 1



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5 Sheets-Sheet 2

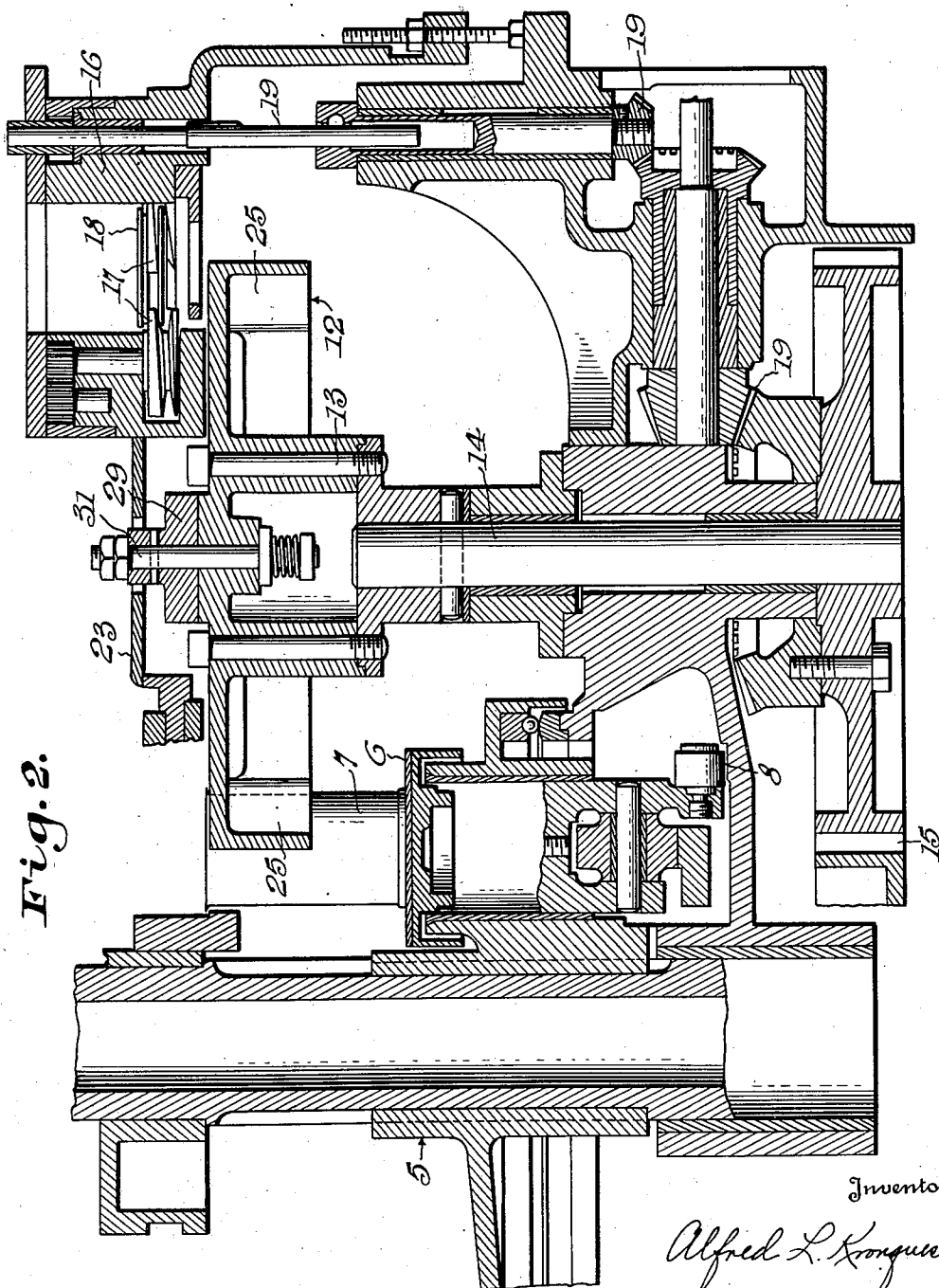


Fig. 2.

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5 Sheets-Sheet 3

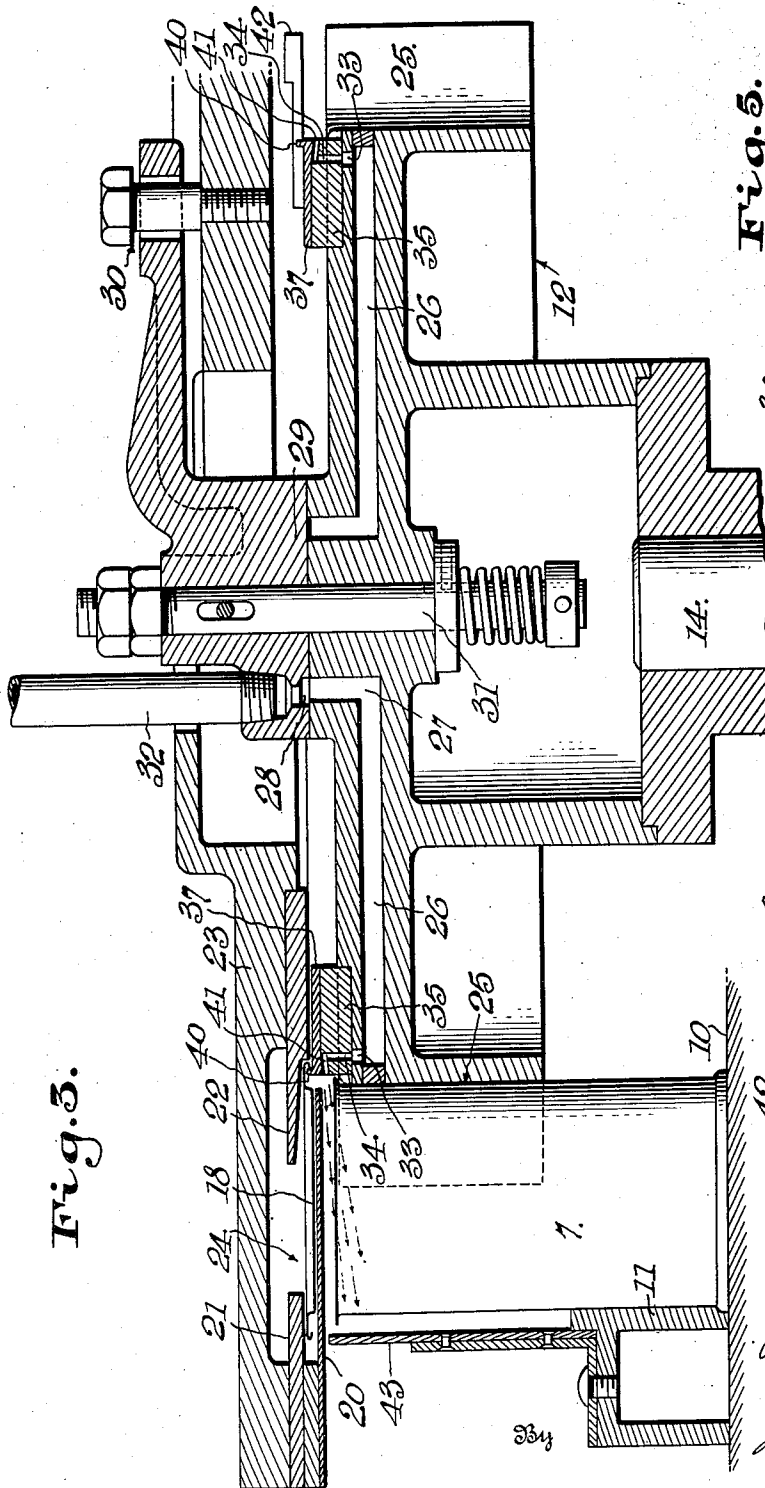


Fig. 3.

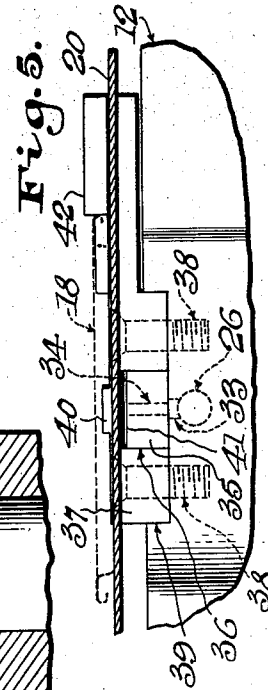


Fig. 5.

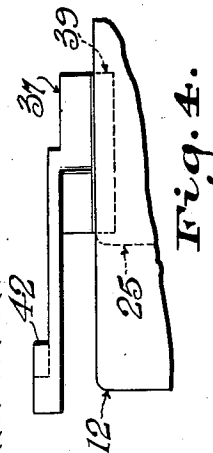


Fig. 4.

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5 Sheets-Sheet 4

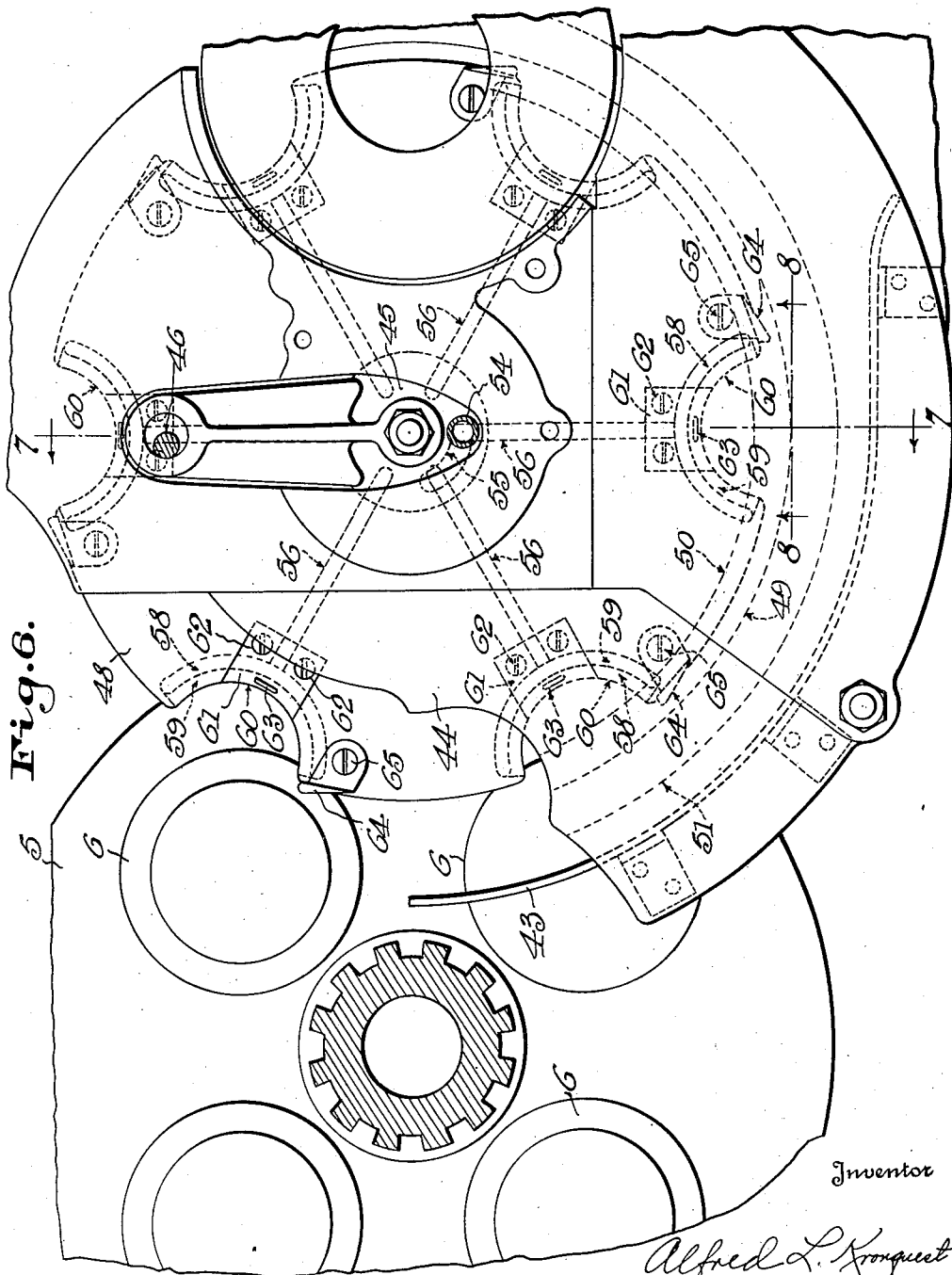


Fig. 6.

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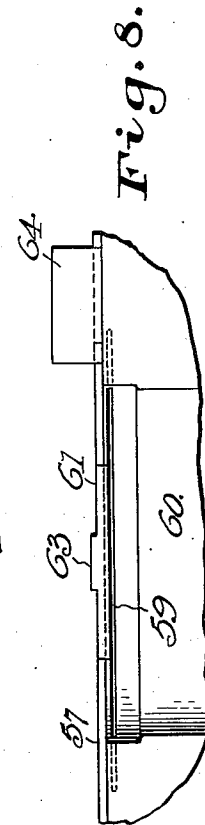
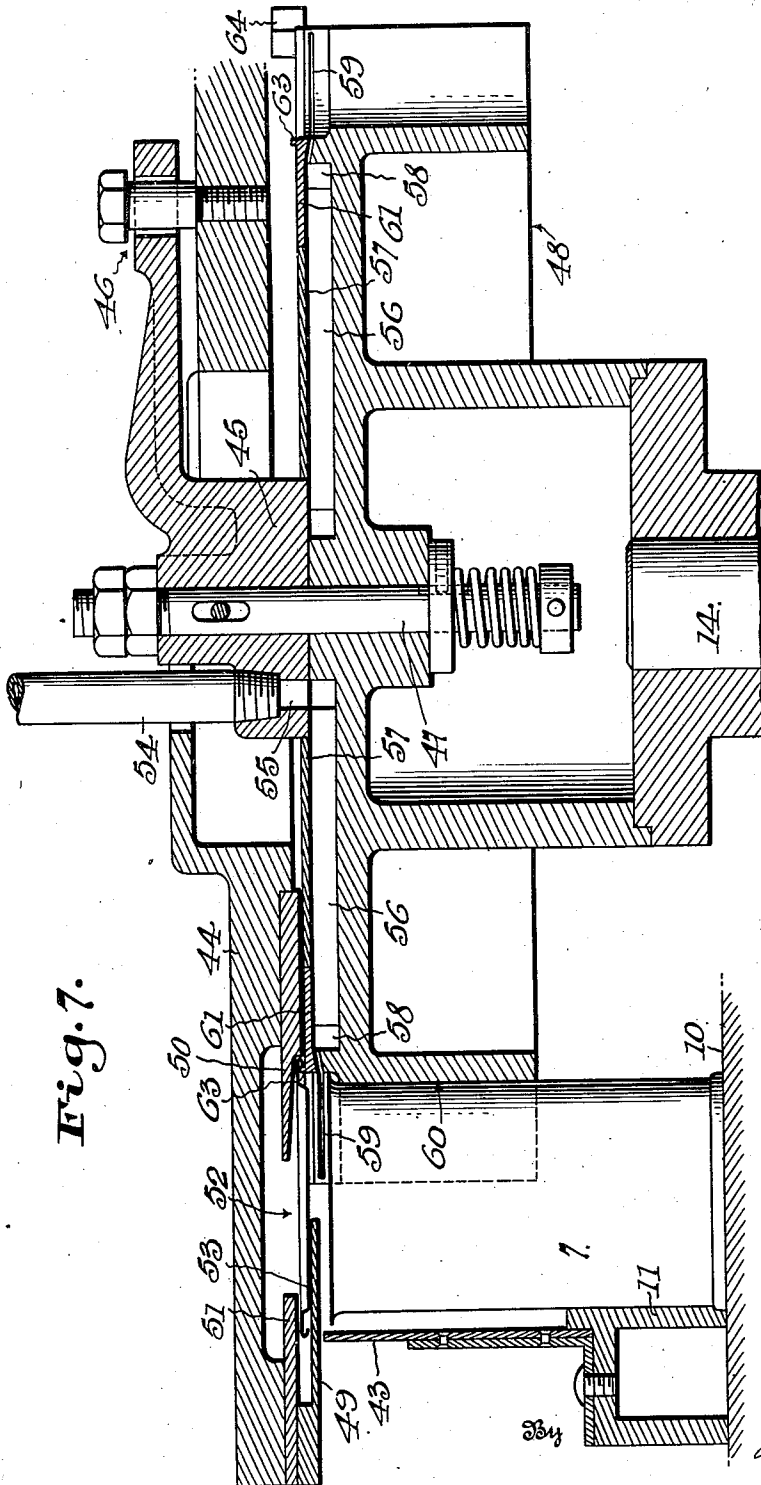
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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,330,598

FILLED CONTAINER GASSING APPARATUS

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Application January 31, 1941, Serial No. 376,913

10 Claims. (Cl. 226—68)

The invention primarily seeks to provide novel means for driving out air from the head spaces above the product in filled containers just prior to the closing of said containers by directing a gaseous medium into said head spaces.

In the packaging of beverage and food products, it is desirable to remove air from the container head spaces prior to the applying and affixing of closures on the containers. Attempts have been made to attain this end by various means, as by the drawing of a vacuum or by force jetting. Such attempts, of which I am at present aware, have proven only partially successful, and apparatuses employed in these attempts have been undesirable because of the complicated nature thereof, difficulty in handling the containers and covers with desired rapidity, and inefficiency in the displacement of the air.

An object of the invention is to provide a novel, simple and inexpensively constructed apparatus of the character stated embodying means for moving the containers with the covers intended to be affixed thereto above and at least partially separated from the containers by a cover supporting wall portion, and means for directing a flow of a gaseous medium into and across the head spaces of the containers to sweep out and displace air therefrom.

Another object of the invention is to provide an apparatus of the character stated embodying novel means for moving the covers and centering them over the containers, and also for holding said containers against displacement by centrifugal force.

Another object of the invention is to provide an apparatus of the character stated embodying novel means for directing the gaseous medium into the container head spaces in a manner for very efficiently displacing the air therefrom.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following the detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a plan view illustrating the invention, parts being broken away and in section.

Figure 2 is a fragmentary vertical cross section taken on the line 2—2 on Figure 1.

Figure 3 is a fragmentary vertical section taken on the line 3—3 on Figure 1.

Figure 4 is a fragmentary vertical section taken on the line 4—4 on Figure 1.

Figure 5 is a fragmentary vertical section taken on the line 5—5 on Figure 1.

Figure 6 is a fragmentary plan view illustrating a modified form of the invention.

Figure 7 is a vertical section taken on the line 7—7 on Figure 6.

Figure 8 is a fragmentary vertical section taken on the line 8—8 on Figure 6.

In the example of embodiment of the invention herein illustrated, there is shown a portion of a container closing machine in which is included a turret 5 equipped with the usual equidistantly spaced container supporting pads 6 upon which the filled containers 7 are supported while the end closures or covers are being affixed thereto. During the affixing of the end closures, the pads 6 are lifted by pad lifting means generally designated 8 so as to move the containers and the associated covers into proper cooperative relation with the attaching mechanism. It should be understood that the invention herein illustrated can be applied to any form of closing machine, and an example of such closing machine is illustrated in the U. S. Letters Patent to Kronquest 1,752,912, issued April 1, 1930.

Filled containers which are to be closed in the closing machine and have air removed from the head spaces above the product therein by the means forming the subject matter of the present invention, are fed toward the machine by any suitable feeding mechanism generally designated 9. Such feeding mechanisms are well known in the art, and since an acceptable mechanism of this character is disclosed more or less in detail in the Kronquest patent hereinbefore referred to, further detailed description thereof herein is thought to be unnecessary.

The feed-in mechanism generally designated 9 delivers the filled containers 7 onto a supporting table portion 10 between a suitable upstanding guide rail 11 and the periphery of a pocketed container feeding turret 12 which is secured, as at 13, atop the turret shaft 14 to which movement is imparted, through suitable gearing 15, in timed relation with the movement of the closing machine turret 5, by suitable power applying means (not shown).

Closing machines of the type referred to usually include filled container feeding turrets 12, as above described, and also suitable cover feeding means. In this illustration, the cover feeding means is generally designated 16 and includes a plurality of supporting and feeding screws 17 upon which the cover units 18 rest in the manner illustrated in Figure 2 of the draw-

ings, and which, upon being rotated in suitably timed relation with the other mechanisms of the machine through drive connections generally designated 19, serve to deposit the cover units one by one onto a supporting plate 20 extending beneath said cover feeding means. The plate 20, along with an outer cover guide ring sector 21 and an inner cover guide ring sector 22, is supported beneath a supporting or frame plate 23, and the plate 20 and the ring sectors 21 and 22 form between them a cover guideway 24.

The turret 12 is provided with a plurality of equidistantly spaced peripheral pockets 25 in which the filled containers engage in the manner illustrated in Figure 2 of the drawings. At the position of each turret pocket, the turret is provided with a radially disposed duct 26 terminating at its inner end in a vertical inlet leg 27, all said inlet legs being disposed in a circle, in the manner illustrated in Figure 1, beneath an arcuate valve recess 28 formed in the under surface of a valve member 29. See Figures 1 and 3. The valve member is held against rotation by being connected, as at 30, with the frame plate 23, and is yieldably held against the rotatable turret by the spring center post 31 in the manner illustrated in Figures 2 and 3. A gaseous medium, such as carbon dioxide gas, nitrogen, or steam, is supplied to the valve recess 28 through a supply pipe 32, and it will be observed that the outer end of each of the radially disposed ducts 26 delivers into an upwardly directed discharge leg 33. Each discharge leg 33 registers with a discharge duct 34 formed in a nozzle piece 35 recessed, as at 36 in the bottom of a combined cover centering and feeding unit 37 which is secured, as at 38, in a recess 39 in the upper surface of the turret. Each of the combined cover centering and feeding units 37 includes an upwardly extended cover holding and centering lug 40 which engages with the downwardly and inwardly curled edge extremity of the cover units 18 in the manner best illustrated in Figure 3 of the drawings. It will be observed by reference to Figures 1 and 3 of the drawings that each nozzle piece includes a fan-shaped discharge throat 41 disposed between the nozzle piece and the overlying portion of the unit 37 and into which the upright gaseous medium discharging duct 34 delivers. Each nozzle piece 35 and the associated combined cover centering and feeding unit 37 together form a mountable unit which, for convenience, may be termed a nozzle block structure.

When a cover unit is engaged with one of the holding lugs 40 at its inner edge portion, the outer portion, or substantially all of the cover unit, rests on and is supported by the plate 20 in the manner illustrated in Figure 3. Each of the combined cover centering and feeding units includes a cover feeding lug extension 42 and each of these feed lug extensions engages behind a cover unit and pushes the same along over the supporting plate 20. The feeding lug extensions 42 and the holding lugs 40 are so cooperatively related that they assure movement of the cover units in centered relation above the filled containers to which they are to be affixed, the holding lugs 40 serving also to hold the covers against displacement by centrifugal force while they are being swung rapidly over the supporting plate 20.

It is preferred that a fence or skirt 43 be mounted beneath the frame plate in concentrically spaced relation to the turret 12 so as to

form a gaseous medium confining tunnel extending from the point at which the filled containers are received in the turret pockets to the point at which the containers and the opposed covers are delivered onto the closing machine turret pads 6. As each container is received in one of the peripheral pockets 25 of the turret, and reaches the station illustrated at the bottom center of Figure 1, the gaseous medium will be discharged thereinto through the respective discharge throat 41, moving in wide fan shape across the whole of the head space and sweeping all of the air therefrom, thereby aiding in the efficient sweeping out of all air from the head spaces.

It will be noted by reference to Figure 1 of the drawings that the arcuate valve recess 28 extends about approximately 90° of the movement of the turret, and thus the delivery of the air sweeping gaseous medium continues until the end of the supporting plate 20 is reached, at which time the cover units are permitted to drop onto the containers just before they are elevated by the pads 6 into cooperative relation with the cover attaching devices.

The tunnel formed by the fence 43 serves to retain an atmosphere of the gaseous medium in a manner further aiding in the expulsion of air from the filled container head spaces.

In Figures 6, 7 and 8 of the drawings, there is illustrated a modified form of the invention. This form of the invention may be applied in combination with the same form of closing turret and cover feed previously described, and the cover plate 44 may also be the same. The same form of valve member 45 may be provided and fixed in like manner, as at 46, to the frame plate 44. The valve member is also yieldably held in like manner, as at 47, against the rotatable turret 48.

The frame plate 44 supports a cover unit supporting ring or sector 49 which is narrower than the supporting plate previously described but which is similarly associated with an inner guide ring or sector 50 and an outer guide ring or sector 51 in like manner supported beneath the frame plate 44 and cooperating with the ring or sector 49 in providing a guideway 52 for the cover units 53.

A gaseous medium supply pipe 54 delivers the gaseous medium to an arcuate valve recess 55 formed in the under surface of the valve member 45 and which communicates with the inner ends of individual, radially disposed ducts 56 formed in the upper surface of the turret 48 and covered by the top plate 57. As in the form of the invention previously described, a radial duct 56 is associated with each of the equidistantly spaced turret pockets.

At its outer end, each duct 56 merges into an arcuate duct or enlargement 58 from which the gaseous medium is delivered through an arcuate slit 59 formed between the arcuate edge at the top of the particular turret pocket 60 and a plate member 61 removably mounted in a recess formed in the top plate 57 overlying the central portion of the particular duct enlargement 58. Each plate member 61 is removably secured, as at 62, to the top portion of the turret 48 and carries an upwardly extended cover holding and centering lug 63 which engages with the downwardly and inwardly curled edge extremity of the cover units 18 in the manner best illustrated in Figures 6 and 7 of the drawings. The lugs 63 hold the covers against displacement by centrifugal

gal force as they are being rapidly swung about the axis of the turret with the outer portions thereof supported on the ring or sector 49 in the manner illustrated in Figures 6 and 7. The covers are thus fed in centered relation above the filled containers to which they are to be affixed by feeding lugs 64 which are removably secured to the upper surface of the turret, as at 65, each said lug 64 cooperating with the associated holding lug 63, in the manner illustrated in Figure 6, in centering the cover unit in the manner stated.

It will be observed by reference to Figures 6, 7 and 8 of the drawings that the gaseous medium discharging slit 59 extends about almost half of the periphery of a given container, and the film of gaseous medium discharged inwardly and downwardly from each said slit efficiently sweeps across the whole of the respective container head space and removes all air therefrom. As in the form of the invention previously described, the valve recess 55 is disposed so as to continue the gaseous medium discharging function throughout approximately one-fourth of the rotation of the turret, this gassing function continuing until just prior to assembly of the filled containers with the overlying cover units.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:

1. In apparatus of the character described, means including a rotatable turret having provision for engaging and simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a limited distance above the tops of the traveling containers and its upper surface disposed in position for engaging under and forming at least partial support for the traveling covers, means carried by the turret and engageable with the covers for holding them against displacement by centrifugal force, and means for directing a gaseous medium into the head spaces of the filled containers for the purpose of displacing air therefrom.

2. In apparatus of the character described, means including a rotatable turret for simultaneously conveying filled containers and covers therefor with the covers disposed above and aligned with the containers, cover holding lugs projecting upwardly from the turret in position for being engageable under edge portions of covers inwardly of the cover centers toward the center of the turret for holding the covers against displacement by centrifugal force, and means for directing a gaseous medium into the head spaces of the filled containers for the purpose of displacing air therefrom.

3. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor with the covers disposed above and aligned with the containers, cover holding lugs projecting upwardly from the turret in position for being engageable under edge portions of covers inwardly of the cover centers toward the center of the turret for holding them against displacement by centrifugal force, each said lug being disposed centrally over one said peripheral pocket, and means for directing a gaseous medium into and outwardly across the

head spaces of containers engaged in said turret pockets from gaseous medium discharging openings disposed just beneath and centered with respect to said lugs.

4. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor with the covers disposed above and aligned with the containers, cover holding lugs projecting upwardly from the turret in position for being engageable under edge portions of covers inwardly of the cover centers toward the center of the turret for holding them against displacement by centrifugal force, each said lug being disposed centrally over one said peripheral pocket, and means for directing a gaseous medium into and outwardly across the head spaces of containers engaged in said turret pockets from gaseous medium discharging openings disposed just beneath and centered with respect to said lugs, each said opening being continuous and fan shaped.

5. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor with the covers disposed above and aligned with the containers, cover holding lugs projecting upwardly from the turret in position for being engageable under edge portions of covers inwardly of the cover centers toward the center of the turret for holding them against displacement by centrifugal force, each said lug being disposed centrally over one said peripheral pocket, and means for directing a gaseous medium into and outwardly across the head spaces of containers engaged in said turret pockets from gaseous medium discharging openings disposed just beneath and centered with respect to said lugs, each said opening being continuous and extended in the form of a narrow slit about more than 90° of the circumference of a container engaged in the respective pocket.

6. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a limited distance above the tops of the traveling containers and its upper surface disposed in position for engaging under and forming at least partial support for the traveling covers, a nozzle block structure carried by the turret at the position of each pocket thereof and including an upstanding cover holding lug engageable under an edge portion of a cover for holding it against displacement by centrifugal force while it is being moved about on the turret, and means including a discharge duct formed in each nozzle block structure below the lug thereof for directing a gaseous medium into and across the head space of a filled container engaged in the respective turret pocket for the purpose of displacing air therefrom.

7. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a limited distance above the tops of the traveling containers and its upper surface disposed in posi-

tion for engaging under and forming at least partial support for the traveling covers, a nozzle block structure carried by the turret at the position of each pocket thereof and including an upstanding cover holding lug engageable under an edge portion of a cover for holding it against displacement by centrifugal force while it is being moved about on the turret, and means including a discharge duct formed in each nozzle block structure below the lug thereof for directing a gaseous medium into and across the head space of a filled container engaged in the respective turret pocket for the purpose of displacing air therefrom, each said nozzle block structure including a cover feeding lug extended therefrom and disposed in cooperative relation with said holding lug for centering the covers over the underlying containers.

8. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a limited distance above the tops of the traveling containers and its upper surface disposed in position for engaging under and forming at least partial support for the traveling covers, a nozzle block structure carried by the turret at the position of each pocket thereof and including an upstanding cover holding lug engageable under an edge portion of a cover for holding it against displacement by centrifugal force while it is being moved about on the turret, and means including a fan shaped discharge duct formed in each nozzle block structure below the lug thereof for directing a gaseous medium into and across the head space of a filled container engaged in the respective turret pocket for the purpose of displacing air therefrom.

9. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a

limited distance above the tops of the traveling containers and its upper surface disposed in position for engaging under and forming at least partial support for the traveling covers, a nozzle block structure carried by the turret at the position of each pocket thereof and including an upstanding cover holding lug engageable under an edge portion of a cover for holding it against displacement by centrifugal force while it is being moved about on the turret, and means including a fan shaped discharge duct formed in each nozzle block structure below the lug thereof for directing a gaseous medium into and across the head space of a filled container engaged in the respective turret pocket for the purpose of displacing air therefrom, each said nozzle block structure including a cover feeding lug extended therefrom and disposed in cooperative relation with said holding lug for centering the covers over the underlying containers.

10. In apparatus of the character described, means including a peripherally pocketed rotatable turret for simultaneously conveying filled containers and covers therefor in an arcuate path with the covers disposed above and aligned with the containers, a cover supporting plate, means stationarily supporting said plate with its under surface horizontally disposed over and spaced a limited distance above the tops of the traveling containers and its upper surface disposed in position for engaging under and forming at least partial support for the traveling covers, an element carried by the turret at the position of each pocket thereof and including an upstanding cover holding lug engageable under an edge portion of a cover for holding it against displacement by centrifugal force while it is being moved about on the turret, and means including a discharge duct shaped at least in part by said element below the lug thereof for directing a gaseous medium into and across the head space of a filled container engaged in the respective turret pocket for the purpose of displacing air therefrom, each said discharge duct terminating in a continuous arcuate discharge slit extending about more than 90° of the circumference of a container engaged in the respective pocket.

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