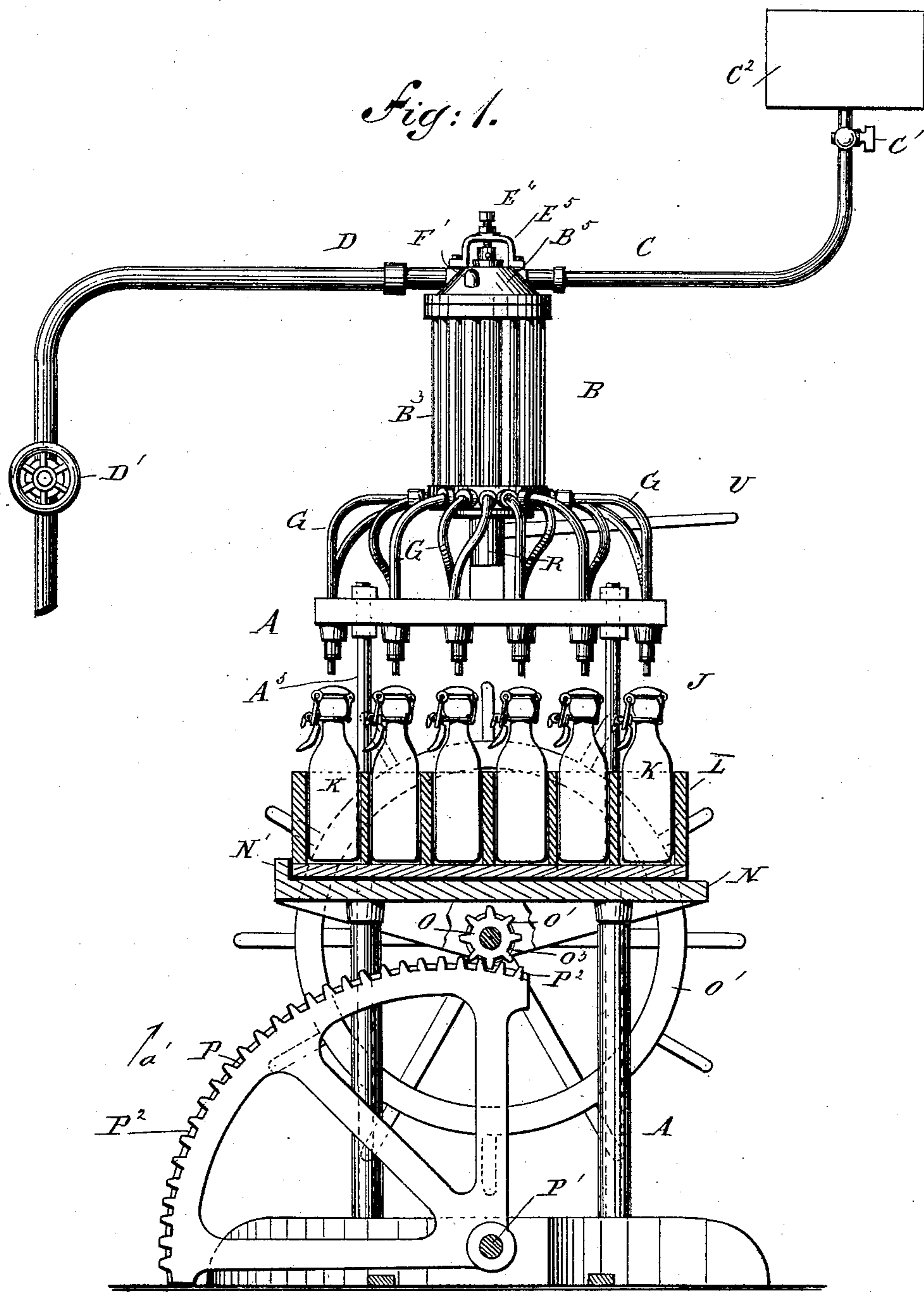


3 Sheets—Sheet 1.

BOTTLE FILLING MACHINE.

Patented Sept. 20, 1892.



WITNESSES:

INVENTORS:

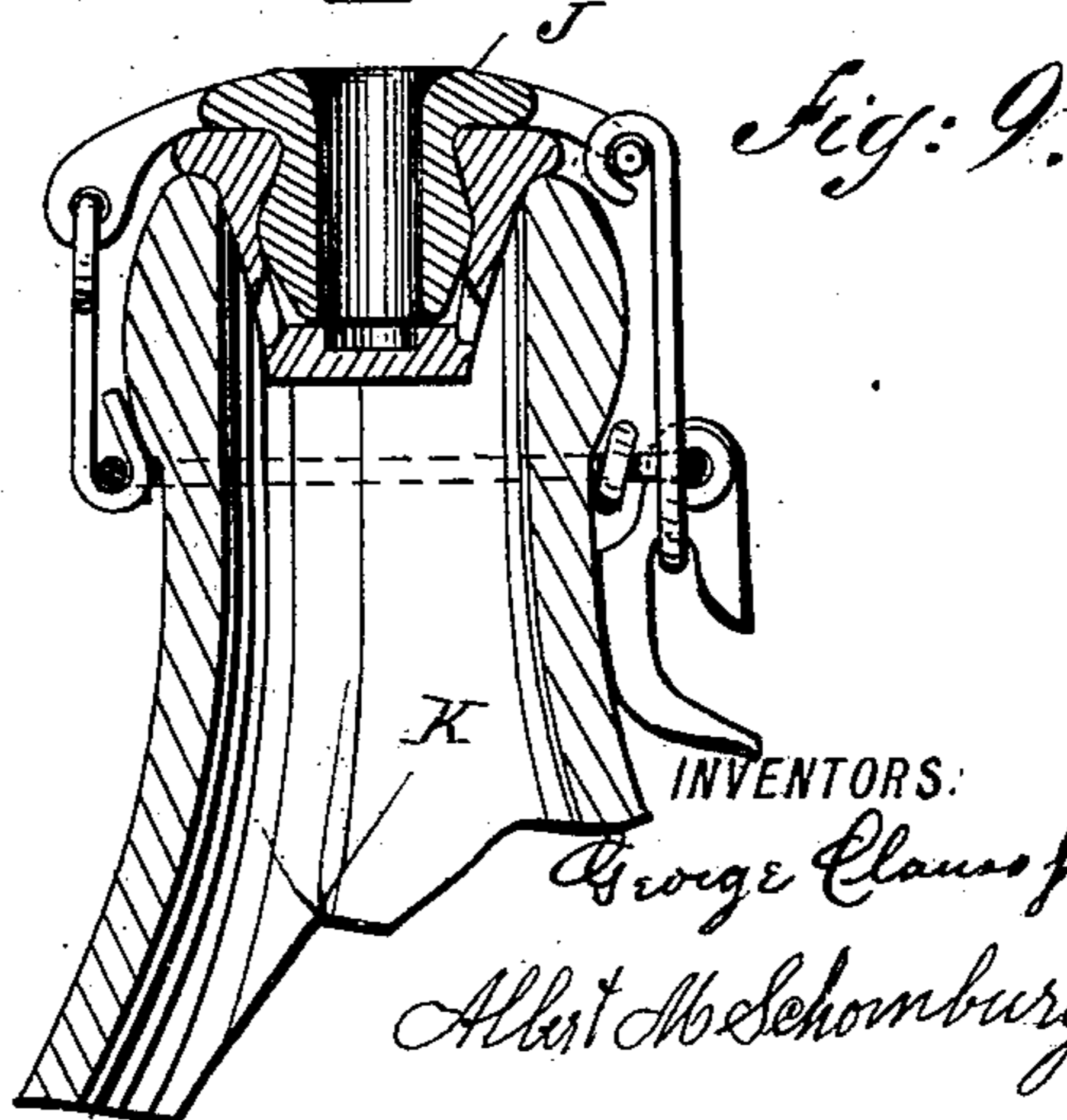
Chas. Nida
F. M. A. A. A.

George Clausen for
Albert H. Schomburg

3 Sheets—Sheet 2.

BOTTLE FILLING MACHINE.

Patented Sept. 20, 1892.



WITNESSES:

WITNESSES:
Chas. Nida
J. Mc Ardle.

INVENTORS:

George Clausen pr.
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(No Model.)

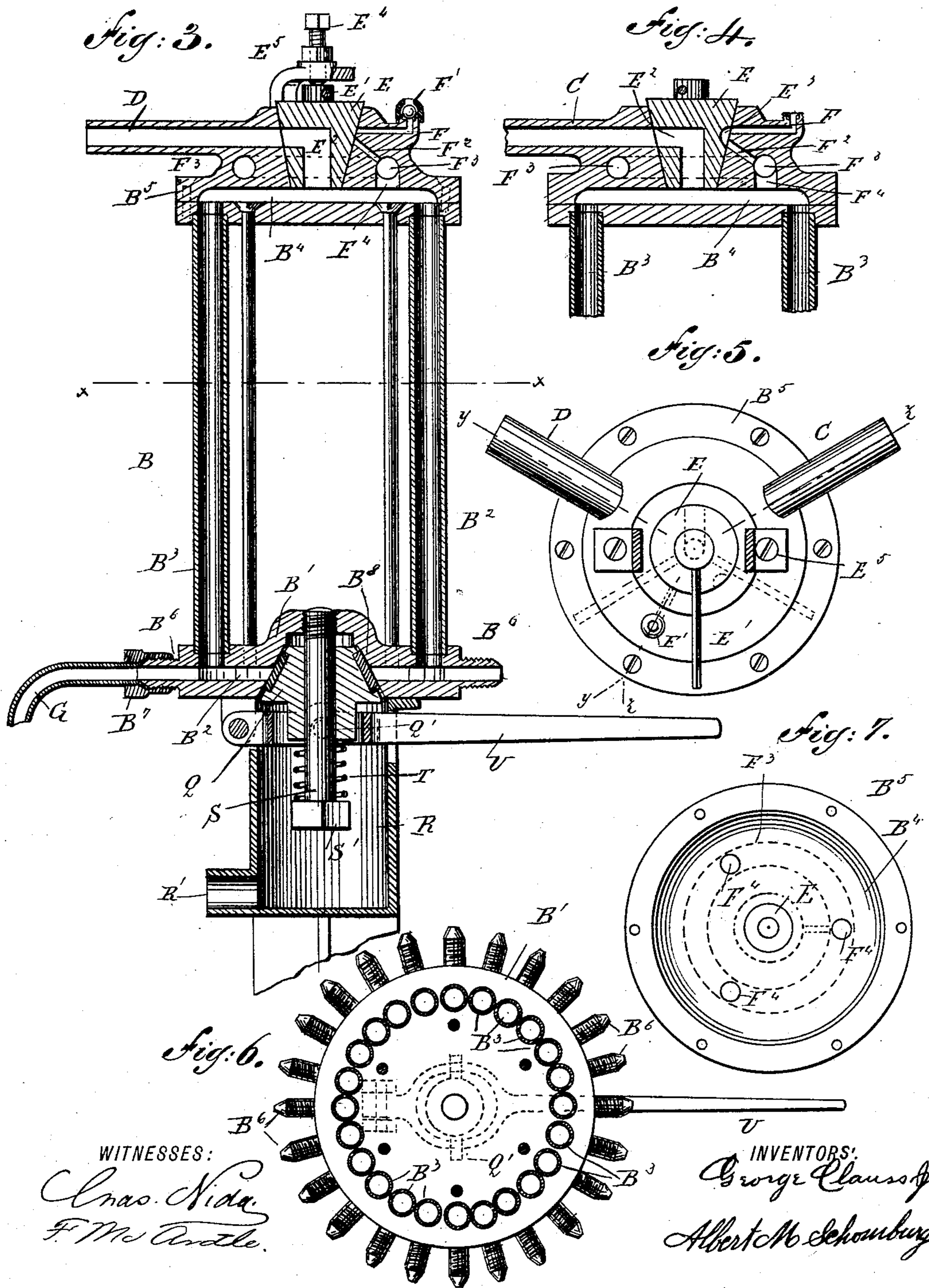
3 Sheets—Sheet 3.

G. CLAUSS, Jr. & A. M. SCHOMBURG.

BOTTLE FILLING MACHINE.

No. 482,893.

Patented Sept. 20, 1892.



UNITED STATES PATENT OFFICE.

GEORGE CLAUSS, JR., OF ELIZABETH, AND ALBERT M. SCHOMBURG, OF
NEWARK, NEW JERSEY.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 482,893, dated September 20, 1892.

Application filed October 15, 1891. Serial No. 408,836. (No model.)

To all whom it may concern:

Be it known that we, GEORGE CLAUSS, Jr., of Elizabeth, Union county, and ALBERT M. SCHOMBURG, of Newark, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

The object of this invention is to provide a new and improved bottle-filling machine which is simple and durable in construction, very effective in operation, and designed to fill a series of bottles simultaneously and rapidly.

The invention consists of a measuring device provided with a series of tubes, one for each bottle and connected with the sirup-supply and a liquid-supply.

The invention further consists of a tray carrying the bottles and mounted to slide vertically and charging-tubes adapted to pass into the bottles and arranged to establish automatically a connection with the series of measuring-tubes.

The invention also consists of various parts and details, as hereinafter more fully described, and pointed out in the claims.

Reference is had to the accompanying drawings, forming part of the specification, and in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is an end view of the same with the tray in section. Fig. 3 is an enlarged sectional side elevation of the measuring device, taken on the line $y y$ of Fig. 5. Fig. 4 is a sectional side elevation of the inlet-valve of the measuring device, taken on line $z z$ of Fig. 5. Fig. 5 is a plan view of the measuring device with parts in section. Fig. 6 is a sectional plan view of the same on the line $z z$ of Fig. 3. Fig. 7 is an inverted plan view of the head or cap of the measuring device. Fig. 8 is an enlarged sectional side elevation of one of the charging-tubes, and Fig. 9 is an enlarged side elevation of one of the bottles to be filled.

The improved bottle-filling machine is provided with a suitably-constructed frame A, on the top of which is supported a measuring device B, provided with a base-plate B', formed with a space B², into which open the

lower ends of a series of tubes B³, arranged vertically and preferably in a circle, as plainly illustrated in Fig. 6. The upper ends of the series of tubes B³ open into the space B⁴, 55 formed into the head or cup B⁵, supported on rods or posts from the base-plate A'. The head B⁵ is connected with a sirup-supply pipe C, leading to a supply-tank C², charged with substance to be filled into the bottles. The 60 head B⁵ also connects by a pipe D, containing a valve D', with a liquid-supply for charging the head with liquid-containing gas (usually carbonic-acid gas) under pressure, in the manner and for the purpose hereinafter more 65 fully described.

In the center of the head B⁵ is arranged a valve E for alternately connecting the space B⁴ with the sirup-supply pipe C and the liquid-supply pipe D. A handle E' is attached 70 to the projecting stem of the valve E for conveniently manipulating the latter to make an alternate connection aforesaid. The valve is formed for this purpose with an L-shaped opening or port E², one arm of which is central and at all times in communication with the space B⁴, the other arm extending horizontally with the pipes C and D. 75

In a periphery of the valve E is formed a cavity E³, adapted to connect with two channels or ports F and F², formed in the head B⁵, and of which the former leads to the top of the head and connects with the ball air-valve serving to admit air to the channel F and arranged to be closed by pressure from within 85 the said channel F. The other channel F² opens into an annular recess formed in the head B⁵ above the space B⁴ and in communication with the latter by vertical apertures F⁴, preferably three in number, as shown in 90 Fig. 7. The valve E is preferably conical in shape and is held to its seat in the head B⁵ by a set-screw B⁴, screwing in a bracket E⁵, attached to the top of the head B⁵.

From the rim of the base-plate B' extend a 95 series of nozzles B⁶, opening into the space B² and corresponding in number to the number of tubes B³. The outer end of each nozzle B⁶ is connected by a coupling B⁷ with the upper end of a bent pipe G, extending downward 100 and connected by a coupling G² with an apertured plug G', screwed into the upper end

of a large bore A^2 , formed in the top of the plate A' , which is part of the main frame A. Into the bottom of the large bore A^2 opens a lesser but concentric bore A^3 , extending downward and through an offset A^4 , formed on the under side of the plate A' . In this bore A^3 is fitted to slide vertically a filling-pipe H, provided at its upper end and within the bore A^2 with a head H' , adapted to be seated on a packing ring or gasket H^2 , held in the bottom of the bore A^2 . The head H' limits the downward motion of the pipe H, and when seated on the ring H^2 forms a tight joint between the two bores A^2 and A^3 to prevent leakage.

A short distance below the head H' are formed in a wall of the pipe H a number of apertures H^3 , adapted to be opened into the bore A^2 when the pipe H is lifted, so as to permit the sirup or other substance to flow from the bore A^2 into the pipe H. Near the lower end of the latter is formed an annular flange H^4 , on which rests a lower end of a spring I, preferably made of rubber, and abutting with its upper end on the under side of the offset A^4 and through which passes a pipe H. The spring in its normal position (shown in Fig. 8) holds the pipe H in the lowermost position, the head H' then being firmly seated on a ring H^2 . When the pipe H is forced upward, the spring I is compressed and the apertures H^3 register with the bore A^2 . On the under side of the flange H^4 is held a washer H^5 , of rubber or other material and adapted to be engaged by the top of the bottle-stopper J, held in the neck of the bottle K to be filled. The end H^6 of the filling-pipe H, projecting below the flange H^4 , is provided near its extreme end with apertures H^7 and is adapted to pass into the bottle-stopper J to open the latter and to establish communication between the pipe H and the interior of the bottle K when the latter is pressed upward.

The bottle-stopper J is preferably of the construction shown in the patent No. 283,476, granted to F. B. Thatcher and J. W. Johnson under date of December 4, 1882, and further description is not deemed necessary. It suffices to say that the lower end of the pipe H comes in contact with part of the stopper and opens the latter in the neck of the bottle when the bottle is pressed upward.

The bottles K are supported in a tray L, provided with compartments, one for each bottle and of a number corresponding to the number of filling-pipes H. The tray L is placed on a platform N, mounted to slide vertically on standards or other suitable guides A^5 of the main frame A. The compartments in the tray are so arranged that when the latter is filled with the bottles and the tray is in place on the movable platform N the bottles stand centrally in line and below the pipes H. The platform N is formed on two sides and the rear with a rim N' to hold the tray in proper position. On the under side of the

platform N is journaled in suitable bearings a shaft O, carrying on its outer end a hand-wheel O' for conveniently turning the said shaft by hand whenever required. On the rear end of the shaft O is secured a pinion O^2 in mesh with a segment P, held on a shaft P' , but having its teeth arranged eccentric to the shaft. The shaft P' is journaled in the base of the main frame A, and the segment is provided on one face with a rim P^2 , the periphery of which extends in line with the pitch-line for the teeth of the segment. On this rim P^2 is adapted to travel a rim O^3 , formed on the pinion O^2 at the pitch-line thereof. When the platform N is in a lowermost position, the pinion O^2 is on the smallest radius of the segment P, and when the shaft O is turned by the operator manipulating the hand-wheel O' , then the pinion O^2 imparts a traveling motion to the segment P, which latter is thus raised to turn in the direction of the arrow a' . The rim P^2 presses on the rim O^3 of the pinion from underneath, so that the pinion, its shaft, and consequently the platform N, with the tray, are raised to move the bottle-stoppers onto the end H^6 of the pipe H for sliding the latter upward and to open the stoppers, as before mentioned, to fill the bottles.

In order to let out gas and air after the bottles are partly filled and without disconnecting the bottles and pipes H, the following device is provided: In a base-plate B' of the measuring device is formed a conical valve-seat B^8 , opening centrally into the space B^2 . In this seat is arranged a conical valve Q, opening into a receptacle R, supported on the under side of the base-plate A' and provided with an outlet R' , connected with a waste-tank or other receptacle. The valve Q is fitted to slide on a pin S, secured on its upper end in the base-plate B' and provided at its lower end with a head S' , on which rests a spring T, pressing with its upper end on the valve Q to hold the latter to its seat. The valve Q is provided on its stem at opposite sides with trunnions Q' , engaged by notches formed in a bent lever U, pivoted to the under side of the base-plate B' and extending to one side to be under the control of the operator.

The operation is as follows: The tray L, filled with empty bottles, is placed on the platform N so that the bottles are in line with the pipes H. The operator then turns the valve E so that it registers with the sirup-supply pipe C and is cut off from the liquid-supply D. At the same time the valve E connects the air-valve F' with the space B^4 of the head B^5 . The substance (sirup) to be filled into the bottles now flows from the tank C^2 in pipe C, through the valve E into the space B^4 , and from the latter into the tubes B^3 to finally fill space B^2 . From the latter the sirup flows through nozzles B^6 into the pipes G and apertured plugs G' into the large bores A^2 . The latter, as well as pipes G, base-plate A' , tubes B^3 , and head B^5 , fill with the sirup

and the latter finally passing through port F¹ and F² into air-valve to close the same, the operator thus seeing that the measuring device is filled with the desired quantity of sirup.

5 During the filling the air can escape through the air-valve F' to facilitate the filling of the measuring device, as above described. When the device is filled, the operator closes the sirup-valve E and manipulates the hand-wheel
10 O' to raise the platform and tray with bottles, so that the latter finally enter the lower ends of the pipes H to open the bottle-stoppers, as above described, and also connecting the upper ends of the pipes H with a large bore A²,
15 filled with the sirup. The latter can then flow into the pipes H and to the bottles. The operator in shifting the valve E, as above mentioned, connects it with the liquid-supply pipe D. The liquid charged with gas under pressure
20 now passes through pipe D, enters the head B⁵, and there exerts its pressure on the sirup to force the latter rapidly downward to facilitate the filling of the bottles with both sirup and liquid in mixture. When the bottles
25 are nearly filled, the operator from time to time presses on the hand-lever U to open the valve Q to let out gas and air from the space B³, the sirup then being below the base-plate B' in the pipes G and H. This letting
30 out of part of the gas and air is necessary to reduce for a time the pressure of the gas above the sirup to permit the air to escape from the bottles and which air is compressed by the inflowing sirup. The bottles, after the escape
35 of the air, can then be completely filled. It is understood that the air escaping from the bottles passes through the sirup in pipes H and G to find its way to the open-valve seat B⁸. The valve Q always closes by the action
40 of the spring T as soon as the operator releases the pressure on the lever U. The raising device for the platform-tray and bottles remains in position without assistance on the part of the operator during the filling. The
45 liquid flows equally through pipes G and H into the several bottles, so that the latter are filled simultaneously. When this is completed, the operator closes valve E and F, and turns the hand-wheel O' in an opposite direction
50 to lower the platform-tray and bottles. On the downward motion of the latter the pipes H are forced in a like direction by the action of the spring I to disconnect finally with the bores A. The bottle-stoppers also
55 close automatically as soon as the lower ends of the pipes H move out of the stoppers on the further downward motion of the bottles. The operator then again shifts the valve E to connect the head B⁵ with the sirup-supply to
60 refill the measuring device. The tray with the filled bottles is removed and another tray with empty bottles is placed on the platform. The above-described operation is then repeated.

65 It will thus be seen that thick semi-fluids can be very quickly and conveniently filled

into bottles by the aid of a suitable gas under pressure.

What we claim, and desire to secure by Letters Patent, is—

1. In a filling apparatus, the combination, 70
with a sirup-supply and a liquid-supply, of a measuring device, a valve mounted to turn in the said measuring device and adapted to alternately connect the said sirup-supply and
75 the said liquid-supply, a fixed platform formed with bores connected with the said measuring device, and charging-pipes adapted to slide in the said bores and arranged to close the bores and to connect with the same, substantially as shown and described. 80

2. A filling apparatus comprising a sirup-supply, a liquid-supply, a head, a valve mounted to turn in the said head and adapted to alternately connect the latter with the said
85 sirup-supply and the said liquid-supply, a base-plate provided with nozzles, and a series of tubes connecting the said base-plate with the said head, substantially as shown and described. 90

3. In the filling apparatus, a measuring device comprising a hollow base-plate, a head, tubes connecting the base-plate with the said
head, a series of nozzles extending from the said base-plate, and pipes connected with the
95 said nozzles, substantially as shown and described.

4. In the filling apparatus, a measuring device comprising a hollow base-plate, a head, tubes connecting the base-plate with the said
100 head, a series of nozzles extending from the said base-plate and pipes connected with the said nozzles, a fixed platform formed with bores connected with the last-mentioned pipes, and charging-pipes adapted to slide in the
105 said bores and arranged to close the bores and to connect with the same, substantially as shown and described.

5. In a filling apparatus, the combination, 110
with a platform mounted to slide vertically and adapted to support the tray carrying the bottles, of a shaft mounted on the said platform, a pinion secured in the said shaft, and an eccentric segmental gear-wheel in mesh with the said pinion, substantially as shown
115 and described.

6. In a filling apparatus, a measuring device comprising a hollow base-plate carrying outlet-nozzles, a series of tubes extending from the said hollow base-plate, a head connected
120 with the said tubes, and a valve mounted to turn in the said head and adapted to alternately connect the said head with a sirup-supply and a liquid-supply, substantially as shown and described. 125

7. In a filling apparatus, the combination, 130
with a platform mounted to slide vertically and adapted to support the tray carrying the bottles, of a shaft mounted on the said platform, a pinion secured in the said shaft, and an eccentric segmental gear-wheel in mesh with the said pinion and rims or annular

flanges formed on the said pinion and gear-wheel and in frictional contact one with the other, substantially as shown and described.

8. In a filling apparatus, the combination,
5 with a sirup-supply and a liquid-supply, of a measuring device, substantially as described, a valve mounted to turn in the head of the measuring device and adapted to alternately
10 connect the latter with the said sirup-supply and the said liquid-supply, a fixed platform formed with bores connected with the said measuring device, charging-pipes adapted to slide in the said bores and arranged to close the bores and to connect with the same, and
15 a second platform mounted to slide toward and from the said fixed platform and supporting the tray carrying the bottles, the lat-

ter being in alignment with the said charging-pipes to engage and actuate the latter, substantially as shown and described.

9. In a filling apparatus, the combination, with a measuring device provided with a hollow base-plate, of a valve seated in the said base-plate and connected with the outside, and means for opening the said valve to let
20 out air and gas from the said base-plate, and a spring for holding the said valve to its seat, substantially as shown and described.

GEORGE CLAUSS, JR.
ALBERT M. SCHOMBURG.

Witnesses:

GEORGE CLAUSS, Sen.,
RESOTH. SCHWARZE.