No. 872,275. PATENTED NOV. 26, 1907.

J. R. COBB.

BOTTLING MACHINE.

APPLICATION FILED SEPT. 4, 1906.

2 SHEETS—SHEET 1.

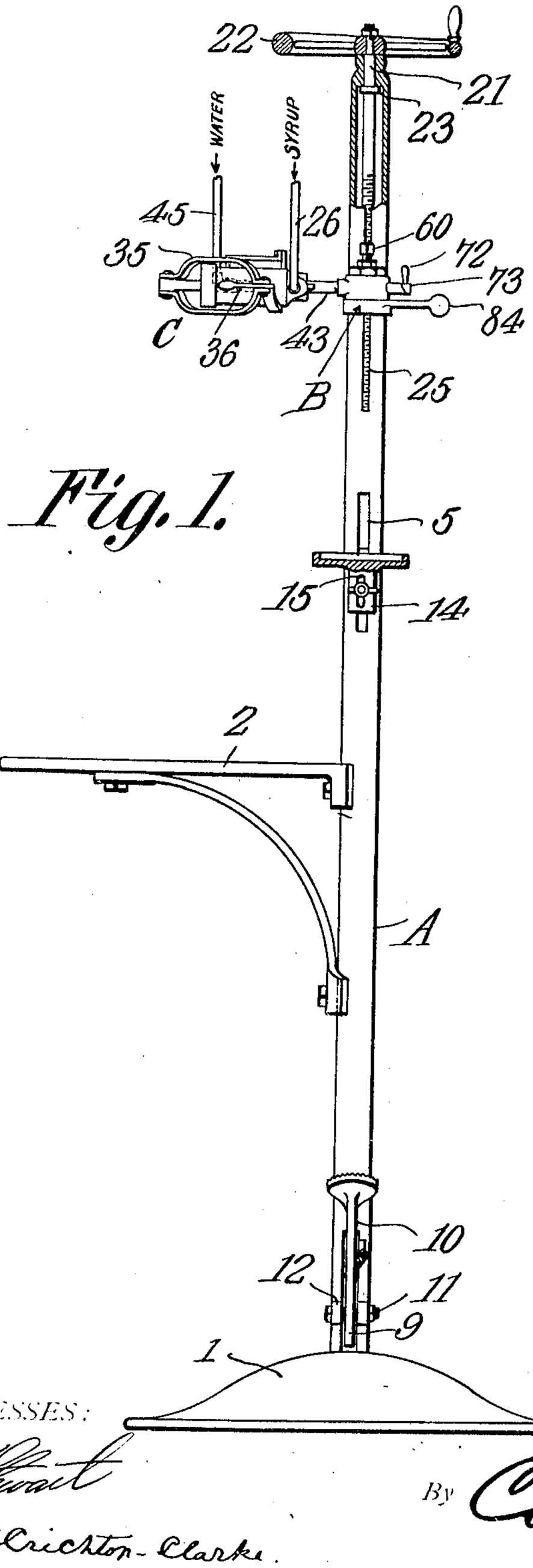

Fig. 1.

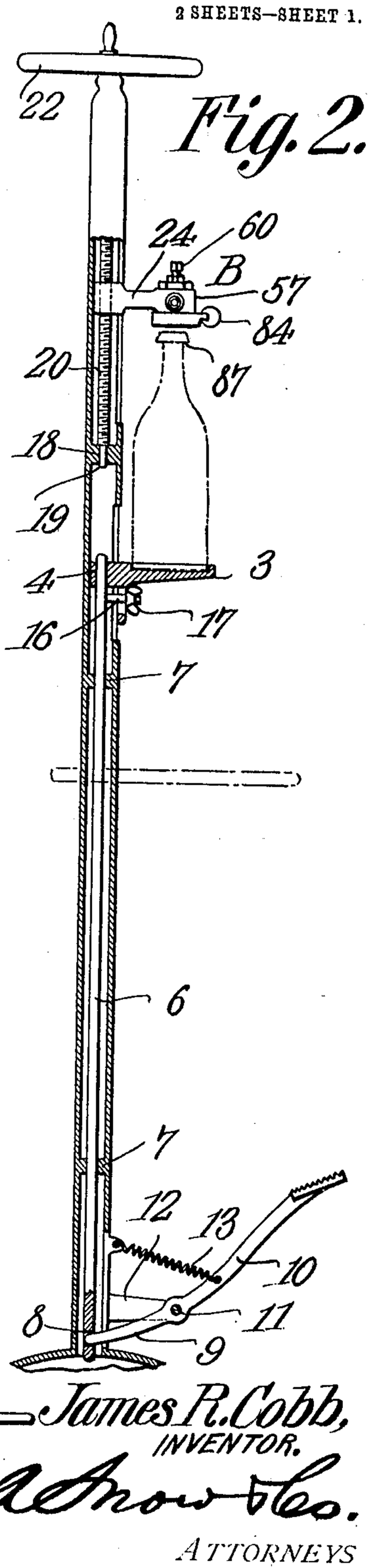

Fig. 2.

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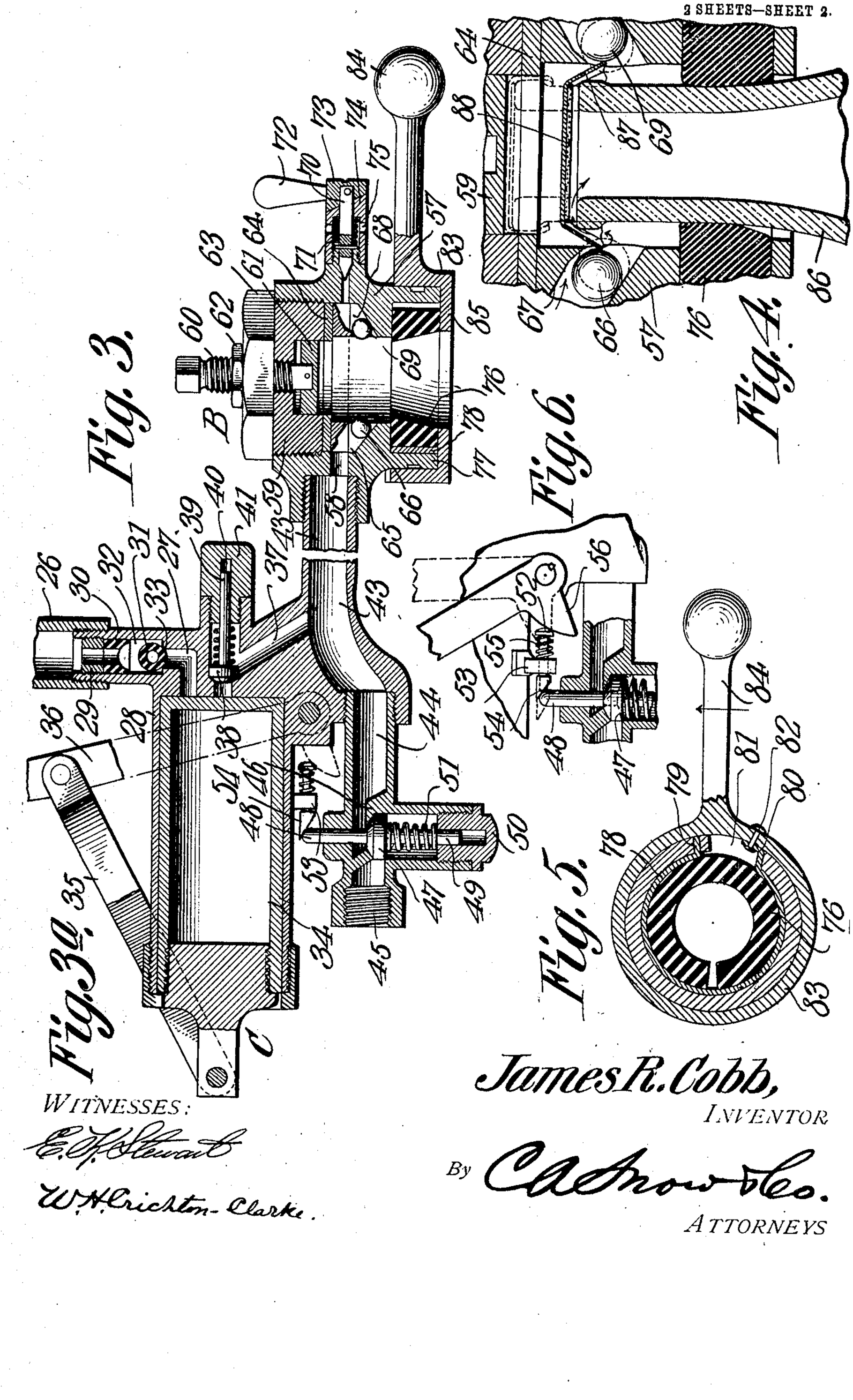

Fig. 3.

Fig. 4.

Fig. 3a.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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BOTTLING-MACHINE.

No. 872,275. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed September 4, 1906. Serial No. 333,205.

To all whom it may concern:

Be it known that I, JAMES ROBERT COBB, a citizen of the United States, residing at Walhalla, in the county of Oconee and State of South Carolina, have invented a new and useful Bottling-Machine, of which the following is a specification.

This invention relates generally to machines for bottling aerated waters, and particularly to a machine of the character specified adapted to supply a small quantity of syrup to the bottle during the bottling operation.

The objects of the invention are to improve and simplify the construction of such devices; furthermore, to increase their efficiency in operation and to decrease the expense attending their manufacture.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of the following claims without departing from the spirit of the invention or sacrificing any of its advantages.

In the accompanying drawings forming part of this specification:—Figure 1 is a side elevation, partly in section, of a machine constructed in accordance with the invention; Fig. 2 is a view somewhat similar to Fig. 1, at a right angle thereto; Fig. 3 is a vertical section through the crowning head; Fig. 3^a is a horizontal section through the syrup pump; Fig. 4 is an enlarged vertical section through a portion of the crowning head, showing a bottle in position to be filled; Fig. 5 is a plan view of the bottle clamping mechanism; and Fig. 6 is an enlarged detail view of the operating mechanism for the water valve.

Like reference numerals indicate corresponding parts in the different figures of the drawings.

The improved bottling machine of the present invention is provided with a supporting frame A which preferably is in the nature of a vertically-extending tube having a base 1. Secured in any suitable manner to the supporting frame A is a shelf 2 adapted to support the bottles which are to be filled by the machine. For the purpose of holding the bottles in position during the operation of filling the same with aerated water, a bottle holder 3 is mounted upon the frame A. In order that the bottle which is to be filled may be moved upward into the crowning head, which is indicated generally by the reference letter B, the bottle holder 3 is formed with a reduced inner end 4 which extends through a vertical slot 5 in the frame A. The reduced inner end 4 is connected with the upper end of a longitudinally-movable rod 6 which extends through suitable partitions or guide members 7 formed in the frame A, as shown in Fig. 2. At its lower end the rod 6 is formed with a perforation 8 into which fits the short end 9 of a tread lever 10 which is fulcrumed at 11 upon an arm 12 connected with the frame A. The outer end of the tread lever 10 is held normally in raised position by means of a spring 13. It will be obvious that by depressing the tread lever 10 with the foot, the rod 6 together with the bottle holder 3 will be raised so as to move a bottle upward into the crowning head B. For the purpose of adjusting the bottle holder 3 a greater or lesser distance away from the crowning head B so as to accommodate bottles of different lengths, said bottle holder preferably is provided with a depending plate 14 having a vertical slot 15 through which extends a pin 16 which is connected with the rod 6 and is provided with a thumb-nut 17. By loosening the nut 17, the bottle holder 3 can be adjusted upwardly or downwardly to a limited extent on the rod 6, after which it can be locked in position by tightening said thumb-nut.

The frame A, adjacent its upper end, is formed with a partition 18 in which is loosely mounted the lower end 19 of a threaded rod 20, the upper end 21 of which extends through the upper end of the frame A and is provided with a hand wheel 22. Below the upper end of the frame A, the threaded rod 20 is provided with a collar 23 which serves to prevent upward displacement thereof. Mounted upon the threaded rod 20 is a supporting arm 24 which extends outward through a vertical slot 25 in the upper end of the frame A. The arm 24 serves as an

adjustable support for the crowning head B and the syrup pump C. In the event that the adjustment of the bottle holder 3 upon the rod 6 be not sufficient or it be desired not to use this adjustment, the hand wheel 22 can be rotated for securing a long adjustment of the crowning head B with respect to the bottle holder 3 so as to adapt the machine to be used for filling bottles of greatly varying lengths.

The syrup pump C, as indicated in Fig. 3 preferably comprises a syrup inlet pipe 26 which has a threaded connection with the inlet pipe 27 of the pump casing 28. Mounted in the syrup inlet 27 is a threaded plug 29 having a central aperture for the downward passage of the syrup. The threaded plug 29 serves to hold in position in the upper end of the inlet 27 a rubber valve seat 30 having a semi-spherical portion adapted to receive a float valve 31 mounted for vertical movement in a valve chamber 32 which is formed in the inlet 27 of the pump. At its lower end the valve chamber 32 is provided with a stop or rest 33 which is adapted to receive the valve 31 when it is in lowered position and permit liquid to flow past the same. Mounted in the valve casing 28 is a piston 34 which is adapted to be operated by means of an approximately oval-shaped yoke 35 connected with a pump handle or lever 36. The outlet 37 of the syrup pump C is provided with an outlet valve 38 which is provided with a valve stem 39 extending into a socket 40 in a removable plug 41. The outlet valve 38 is normally held in closed position by means of a coil spring 42. The outlet 37 of the syrup pump leads into a large supply pipe 43 which is adapted to convey the syrup and aerated water to the crowning head, as will hereafter appear. Connected with the forward end of the supply pipe 43 is a water inlet pipe 44, the threaded end 45 of which is adapted to be connected in any suitable manner with a source of aerated water supply. The water inlet 44 is provided with a valve seat 46 with which coöperates a valve 47 having a stem projecting at its upper end 48 through an opening in the upper end of the inlet 44, and at its lower end 49 into a socket in a removable plug 50, the valve 47 being held normally against its seat by means of a coil spring 51.

The valve 47 is adapted to be operated at the proper times by means of a push pin 52, shown in Fig. 6, which is mounted to slide in a bracket 53 connected with the pump casing 28. The forward end of the push pin 53 is beveled, as indicated at 54, and is adapted to engage the upper end 48 of the stem of the valve 47. The push pin 52 is held normally in its rearmost position, out of contact with the upper end 48 of the valve stem, by means of a coil spring 55. For the purpose of forcing the push pin 52 forward to open the valve 47, a cam member 56 is suitably connected with the pump lever 36. The operation of this part of the machine is as follows: After the pump C has been worked once or twice, the inlet 27 of the pump casing 28 will be filled with syrup which will be prevented from entering the pump casing by the piston 34 when in the position illustrated in Fig. 3ª. The syrup in the valve chamber 32 causes the valve 31 to float upward against the valve seat 30. If, now, the pump lever 36 be thrown to the left in Fig. 3ª, syrup will be drawn into the pump casing 28 and the valve 31 will descend to the rest or stop 33. As soon as the movement of the pump lever 36 to the left has ceased so that the piston 34 stops and therefore does not exercise any further sucking action to hold the valve 31 against the rest 33, said valve, by reason of its buoyancy, floats upward in the syrup and rests against the upper valve seat 30 to prevent back flow. Therefore, if the pump lever 36 be thrown to the right in Fig. 3ª, the valve 31 together with the valve seat 30 will prevent the upward escape of any syrup, and the compression exercised by the piston 34 on the small amount of syrup previously drawn into the pump casing 28 will force said syrup to open the outlet valve 38 and pass through the outlet 37 into the supply pipe 43. At the same time, during this movement of the lever 36 to the right, the cam 56 on the lever 36 strikes the push pin 52 and moves the same to the left in Fig. 6, thus causing the beveled end 54 of said push pin to open the valve 47 and permit the entrance of aerated water to the supply pipe 43. This supply of aerated water washes the syrup which has been fed to the supply pipe 43 into the crowning head where the water and syrup are both fed to the bottle. It will be understood that the amount of water which is to be fed to a bottle is very much larger than the amount of syrup. For this reason the lever 36 is held in its right hand position for a sufficient length of time to permit the necessary quantity of water to pass the valve 47 and fill the bottle. During this time that the valve 47 is open and the bottle is being filled with water, the piston 34 of course is stationary and, therefore, cannot feed any more syrup to the bottle. When the bottle is filled, the lever 36 is thrown to the left, thus causing the cam 56 to release the push pin 52 and permit the valve 47 to close and at the same time causing a further quantity of syrup to be drawn from the valve chamber 32 into the pump casing 28. The operation previously described is then repeated for the next bottle.

The crowning head B preferably consists

of a casing 57 which is threaded on to the supply pipe 43 and is provided with an inlet 58. Threaded into the upper end of the casing 57 is a plug 59 through which extends an adjusting screw 60 having on its lower end a head 61 adapted to limit the upward movement of a bottle during the operation of crimping the cap. The adjusting screw 60 is held in adjusted position by means of a lock nut 62, and the downward adjustment of the plug 59 is limited by a nut 63. Fitted against the lower end of the plug 59 is a crowning ring 64 which, when the crimped bottle cap is forced upward on the bottle serves to contract said cap around the neck of the bottle and hold it in position. The inlet 58 of the crowning head is inclined downwardly, as indicated at 65, and is adapted to be closed normally by means of a ball 66. The upper wall of the inclined portion 65 is grooved or cut away, as indicated at 67, so that when the ball 66 is forced upward a slight distance away from the lower end of the inclined inlet passage, the liquid can pass around said ball and enter the bottle. For the purpose of permitting the escape of air from the bottle which is being filled, an outlet passage 68 is formed in the crowning head, as shown, said outlet passage being similar in form to the inlet 58 and having a ball 69 for closing the same. The outer end of the outlet passage 68 is controlled by means of a snifting pin 70 which is forced inward normally by means of a spring 71 and is adapted to be drawn outward to open the passage 68 by means of a handle 72 having a beveled or cam head 73. When the handle 72 is drawn down into horizontal position, the beveled or cam head 73 changes its position with respect to the beveled end of a plug 74 and holds the snifting pin 70 in its outer position, whereby to permit the escape of air through the openings 75 in the plug 74.

For the purpose of producing a tight joint around the neck of the bottle, so as to cause all the liquid to enter the mouth thereof, the crowning head B is provided in its lower end with a split rubber ring 76 which is fitted inside a depending annular flange 77 formed integral with the casing 57. For the purpose of compressing the split ring 76 so as to cause the same tightly to clamp a bottle neck, said ring is surrounded by a metallic band 78, one end 79 of which is connected with the annular flange 77 and the other end 80 of which extends downward through a slot 81 in the annular flange 77 and is connected by means of a screw 82 with a ring 83 which is formed integral with a lever 84. The ring 83 is formed with a lower annular flange 85 which extends under the depending flange 77 and ring 76, as shown. When a bottle has been pressed upward into the crowning head and the lever 84 is thrown in the direction of the arrow in Fig. 5, the diameter of the metallic band 78 will be decreased so as to cause the split ring 76 to clamp the bottle. In filling a bottle such as 86, the ordinary form of crown cap 87 is first placed on said bottle so that the crimped portions of said cap rest against the upper end of the neck thereof and hold the cork disk 88 of the cap 87 a slight distance above the bottle neck. The bottle is then placed upon the bottle holder 3 and the lever 10 is depressed so as to force the neck of the bottle together with the cap 87 upward into the crowning head B until the periphery of the cap 87 engages the balls 66 and 69 and moves them a slight distance upward. If, now, the lever 36 be operated as previously described, the syrup and aerated water will enter through the inlet 58 and passage 65 where it will pass around the ball 66 and enter the bottle by moving upward between the neck of the bottle and the rim of the cap 87, it being understood that the crimped portions of said cap serve to produce grooves through which liquid can enter. After the bottle has been filled, the tread lever 10 is further depressed so as to force the bottle upward until the cap 87 moves through the crowning ring 64 which contracts or crimps the peripheral flange of the cap and causes it to grip the bottle neck in an air-tight manner. During the operation of filling a bottle, the lever 84 in Fig. 5 is manipulated to cause the split ring 76 to grip the bottle neck.

The improved bottle filling machine of this invention is strong, simple, durable and inexpensive in construction as well as thoroughly efficient in operation.

What is claimed is:—

1. A bottle filling machine comprising a supporting frame, a bottle holder movably mounted thereon, a crowning head adjustably mounted upon the frame and above the holder, means for adjusting the head toward or from the holder, a pump movable with the crowning head and having an outlet above the bottom thereof and opening into the crowning head, means for directing a second fluid into the crowning head, a valve for closing said means, a lever for actuating the pump, a cam carried thereby, and a spring controlled push device for transmitting motion from the cam to the valve to open said valve immediately subsequent to the actuation of the pump.

2. A bottle filling machine comprising an adjustable crowning head, a pump casing carried thereby, there being a passage for establishing communication between the pump casing and the crowning head, said pump casing having a valved inlet, a valve nor-

mally closing the outlet of the pump casing, a piston within the pump casing, a valved water inlet opening into the crowning head, and means outside of the casing for actuating the piston and for opening said valve to admit water to the crowning head subsequent to the discharge of fluid by the piston into the passage.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES ROBERT COBB.

Witnesses:
W. B. LOEHR,
C. R. D. BURNS.