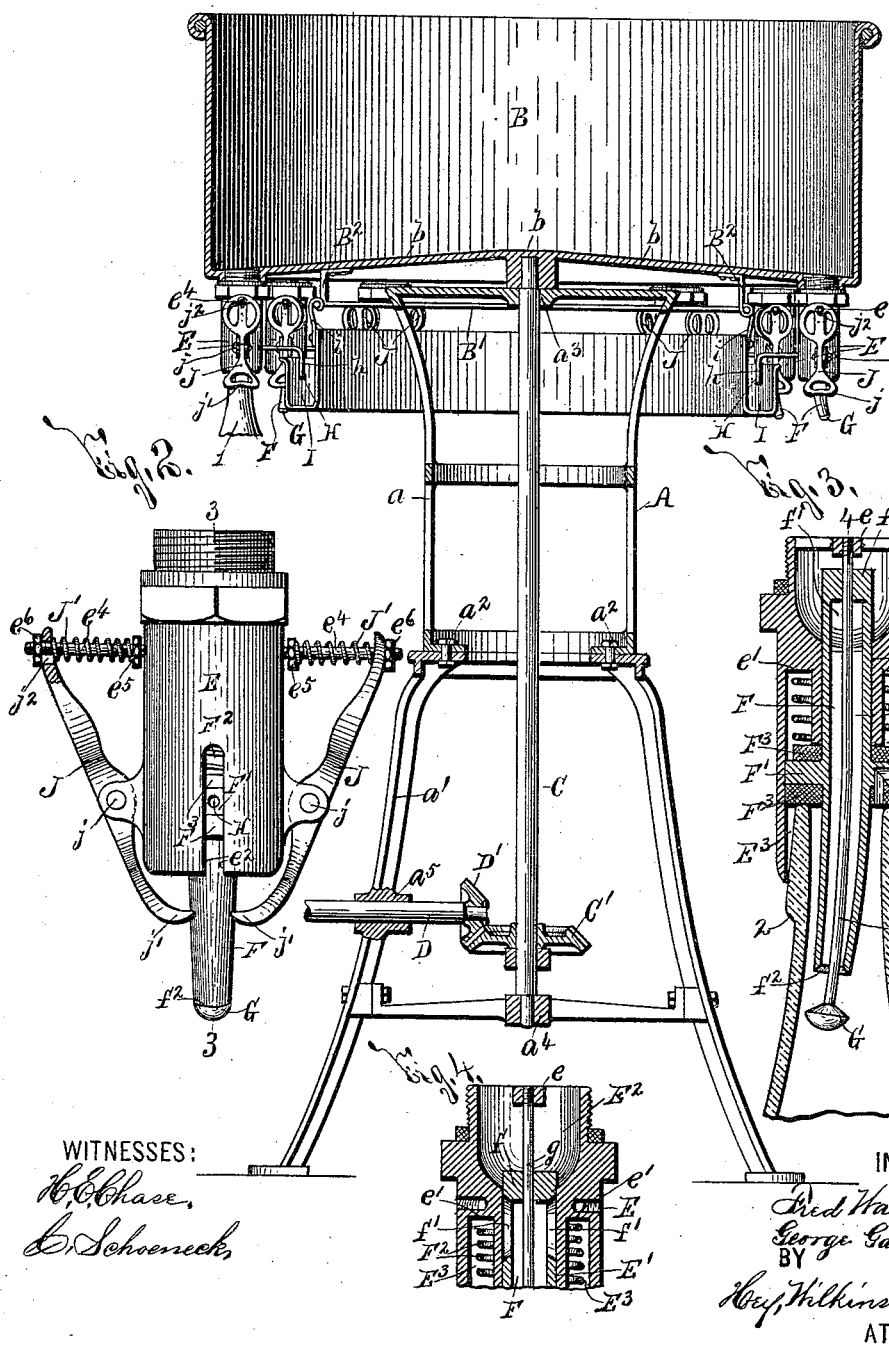
(No Model.)

F. WALLIS & G. GALBRAITH.

FILLING MACHINE.

No. 525,827. Patented Sept. 11, 1894.

Fig. 1.



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FRED WALLIS AND GEORGE GALBRAITH, OF ROCHESTER, NEW YORK.

FILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 525,827, dated September 11, 1894.

Application filed December 22, 1893. Serial No. 494,466. (No model.)

To all whom it may concern:

Be it known that we, FRED WALLIS and GEORGE GALBRAITH, of Rochester, in the county of Monroe, in the State of New York, have invented new and useful Improvements in Filling-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Our invention relates to an improved filling machine, particularly applicable for inserting catsup and similar materials into bottles or other articles to be filled, and has for its object the production of a device which firmly and practically supports the articles to be filled and practically and quickly inserts the material thereinto, without waste of the material or soiling of the outer face of the articles to be filled, and is so constructed as to uniformly and continuously fill said articles and permit them to automatically govern the flow of the material and to be readily and quickly engaged or disengaged by the machine; and to this end it consists in the general construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters and figures indicate corresponding parts in all the views.

Figure 1 is a longitudinal vertical sectional view, partly in elevation, of our improved machine illustrating the relative construction and arrangement of its component parts, the upper extremity of a bottle being shown as connected to one of the discharge tubes. Fig. 2 is an elevation of one of the detached spouts secured to the receiving receptacle for guiding the corresponding discharge tube. Fig. 3 is a vertical sectional view, taken on line 3—3, Fig. 2, and Fig. 4 is a vertical sectional view, taken on line 4—4, Fig. 3, the upper end of the discharge tube being shown in its normal position.

A represents a supporting frame, which is of any desirable form, size, and construction, and is here illustrated as composed of upper and lower sections *a a'* secured together by bolts or other suitable fastening means a^2.

B is a receptacle for receiving the material to be filled, and, as here illustrated, this receptacle is shown as cylindrical and as provided with a bottom wall *b* inclining downwardly from its central portion.

In the preferable construction of our invention the receptacle B is rotary, and may evidently be actuated by any desirable form of mechanism.

At Fig. 1 we have illustrated a vertical shaft C extending lengthwise of the frame A and having its opposite extremities journaled in upper and lower bearings a^3 a^4 and its upper extremity extended beyond the bearing a^3 and rigidly secured in any desired manner to the central portion of the receptable B. Near the lower end of the shaft C is a bevel gear C' which meshes with a similar gear D' upon a horizontal shaft D having one end journaled in a bearing a^5 of the frame A and the other end, not illustrated, connected in any desired manner to suitable power mechanism, not necessary to herein illustrate and describe.

E—E are a series of spouts arranged in a circle and depending at intervals from the depressed or outer portion of the lower wall *b* of the receptacle B. Each of these frames or bodies is formed with a lengthwise guide E', and is provided at its upper end with an outlet chamber E^2 opening from the receptacle B and communicating with the guide E', and at its lower end with a socket E^3 communicating with the guide E' and having its upper end extended above the lower end of said guide.

F—F represent a series of discharge tubes, each of which is supported by a corresponding spout E, and is movable in the guide-way E' therein. Each of the discharge tubes F is formed with a closed top *f* and with an inlet opening or openings *f'* in its side wall arranged normally beneath the bottom wall of the corresponding outlet chamber E^2, and the lower end thereof is inclined outwardly from the lengthwise plane of the remaining portion of the tube, and is provided at its extremity with an outlet f^2.

Each of the spouts E is provided with a suitable valve G for normally closing the outlet f^2 of the corresponding discharge tube F. As clearly seen at Fig. 3 each of the valves G is mounted upon the lower end of a sta-

tionary valve stem g passed longitudinally through the discharge tube F and having its upper end extended through the top f of said tube and secured to a cross bar e at the upper portion of the corresponding outlet chamber E^2.

The discharge tubes F are provided with engaging shoulders F′ guided longitudinally in the corresponding sockets E^3, whereby, when the noses or upper ends of the articles or bottles 1 to be filled are inserted within said sockets, the shoulders F are engaged, and, by the upward movement of said articles to be filled, the discharge tubes F are forced longitudinally from their normal positions for connecting the opening f' in their upper ends with the corresponding outlet chambers E^2 and elevating their lower ends above the valves G for permitting egress from the outlets f^2 of the materials to be filled.

When the articles are filled their noses or upper ends are withdrawn from the sockets E^3 and the discharge tubes F assume their normal positions, and effectually shut off the discharge of the material. This movement of the tubes F is facilitated by springs F^2 having their lower ends bearing against the shoulders F′ and their upper ends against shoulders e' of the spouts E.

When an article is being filled the lower end of the discharge tube is inserted within the same, as clearly seen at Fig. 3, to a plane separated a greater distance from the upper end of said article than the outlet f^2 of said tube is separated from the valve G for closing the same, and consequently, as the article is withdrawn, the corresponding spring F^2 moves the tube F lengthwisely and engages the sides of its outlet opening f^2 with the valve G before said article is withdrawn from the tube F, and the flow of the material to be filled is positively and effectively cut off before the withdrawal of the discharge tube from the article to be filled. Moreover, as previously stated, the egress of the material from the discharge tubes is effected automatically upon placing the article to be filled in position on the machine, as the lengthwise movement of said article to such position moves the corresponding discharge tube F against the action of the spring F^2 for holding the same in its normal position, and elevates the outlet f^2 above the valve G. It is evident, however, that the elevation of the outlet f^2 above the valve G takes place only after the discharge tube is within the article to be filled, and consequently there is no liability whatever of the discharge, of the material to be filled, upon the outer face of the article for receiving the same.

In the foregoing description of our invention we have stated that the shoulders F′ of the tubes F are directly engaged by the article to be filled and the springs for forcing said tubes to their normal positions, but, in practice, we prefer, as shown at Fig. 3, to provide said shoulders F′ with yielding faces or washers F^3 F^3 which reduces to a minimum the noise incidental to the engagement and removal of the articles to be filled.

As previously stated, and as clearly seen at Fig. 3, the lower ends of the discharge tubes F are inclined outwardly from the lengthwise plane of the remaining portions of the tubes. This inclination of the lower ends of the discharge tubes serves to conduct the material to be filled directly against the side of the article to be filled and causes said material to flow down said side and permits the same to enter said article continuously and uniformly without the formation of bubbles and also permits the air to escape more practically and effectively than would otherwise be possible. The escape of air is also facilitated by drip or vent tubes H having their inner ends opening from the lower faces of the shoulders F′ and their lower yielding faces F^3, and the central portions guided through slots or apertures e^2 in the spouts E and having downturned ends h. The ends h discharge any material conducted therein into a receptacle I provided with upwardly extending arms i detachably engaged with a ring or other suitable support B′ having arms B^2 attached to the lower wall b of the receptacle B.

It will be readily apparent to one skilled in the art that, instead of providing the spouts E with outlet chambers E^2 into which the outlet tubes E project, said chambers may be omitted and the outlet tubes may then project into the receptacle B, but this is not the preferable form of our invention, as we desire to prevent obstruction of the flow in the receptacle B by parts projecting above its lower wall.

J J are clamps for holding in position the articles to be filled, and, as preferably constructed, these clamps consist of levers pivoted at j to the spouts E and provided at their lower ends with shoulders or engaging ends j' for engaging shoulders 2 upon the upper end of the articles or bottles 1 to be filled. The upper ends of the clamps or levers J are provided with apertures j^2 guided longitudinally along arms e^4 projecting from the spouts E. These arms e^4 are encircled by spiral springs J′ having their inner ends bearing against movable shoulders e^5 upon the inner ends of said arms, and their outer ends bearing against the upper ends of the clamps or levers J for forcing the lower ends of said clamps or levers to operative position.

As clearly seen at Fig. 2, the arms e^4 are provided at their outer ends with movable shoulders e^6, which bear against the outer faces of the upper ends of the clamps J J. These shoulders e^6 and the shoulders e^5, previously mentioned, serve to both govern the movement of the clamps J and adjust the tension of the springs J′.

As clearly seen at Fig. 2 the lower ends of the levers or clamps J J are inclined inwardly, and, in the practical operation of our machine, are readily forced outwardly by the upward movement along the corresponding tube

F of a bottle or other article to be filled, and, as the shoulder 2 of said article passes above the shoulders or ends j', the springs J′ operatively engage said shoulders j' with the shoulder 2, and said article is securely and firmly held while being filled.

When the article or bottle is filled it is withdrawn downwardly along the tube F, and the lower ends of the clamps or levers J are forced outwardly by the downward movement of the shoulder 2.

In the practical operation of our machine the time of a portion of the revolution of the receptacle B is equal to the time required for the filling of an article by a discharge tube F, and consequently an operator stands at one portion of the machine and feeds unfilled bottles thereto, and another operator stands at a second portion of the machine and removes the articles when filled.

The operation of our invention will be readily perceived from the foregoing description and upon reference to the drawings, and it is evident that the same is simple in construction, is readily assembled in operative position, is easily and quickly cleaned, firmly and practically supports the article to be filled, inserts the catsup or other material uniformly thereinto without waste or soiling of the outer face of said article, and is so constructed as to fill the material rapidly and continuously, and to permit automatic control of the flow of the material by the engagement or disengagement by our machine of the article to be filled, and to enable ready and quick operation of the clamps for holding the same in position.

As the detail construction and arrangement of the parts of our machine may be readily varied without departing from the spirit of our invention we do not herein specifically limit ourselves thereto.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a filling machine, the combination with a receptacle, a spout connected therewith and having an outlet chamber, a cross bar within said chamber, a deflected valve stem depending from said bar, and a valve at the lower end of the stem; of a discharge tube sliding within said spout, surrounding the valve stem above the valve, having its lower end deflected to correspond with the deflection of the stem, and having a closed upper end surrounding the stem and provided with openings in its sides adapted to communicate with the outlet chamber, and means for pressing this tube normally downward to close its lower end on said valve, substantially as and for the purpose set forth.

2. In a filling machine, the combination with a receptacle, a spout connected therewith and having an outlet chamber at its upper end and an internal guideway within its body, a deflected valve stem depending from a fixed support within said chamber, and a valve at the lower end of the stem; of a discharge tube sliding within the guideway, surrounding the stem above the valve, having its lower end deflected to correspond with the deflection of the stem, and having a closed upper end surrounding the stem and provided with side openings adapted to communicate with the outlet chamber, a shoulder on the tube, and a spring within the guideway pressing on the shoulder for bearing the tube downward to normally close its lower end on said valve, as and for the purpose set forth.

3. In a filling machine, the combination with a spout having a slot in one side and provided with an outlet chamber at its upper end and also with an internal guideway; of a discharge tube sliding within said spout and having a closed upper end with an opening in its side, a shoulder on the tube beneath said guideway, a spring within the guideway bearing the shoulder normally downward, a drip or vent tube carried by said shoulder, opening through its lower face, and projecting through the slot in the spout, and means for closing the discharge tube when in its lowermost position, substantially as and for the purpose set forth.

4. In a filling machine, the combination with a delivery spout having ears on its sides, and a longitudinally movable filling tube projecting below said spout; of levers centrally pivoted to said ears and having inturned engaging ends at their lower extremities bearing normally against said filling tube, and expansive springs between their upper extremities and said spout, substantially as and for the purpose specified.

5. In a filling machine, the combination with a delivery spout having ears on its sides, and a longitudinally movable filling tube projecting below said spout; of levers centrally pivoted to said ears and having inturned engaging ends at their lower extremities bearing against said filling tube, arms projecting radially from the spout and passing through eyes near the upper extremities of the levers, adjustable shoulders on the outer ends of said arms, similar shoulders near their inner ends, and expansive springs between the inner shoulders and the eyes, as and for the purpose set forth.

6. In a filling machine, the combination with a delivery spout having ears on its sides, and an upright slot in one side interposed between the ears, a longitudinally movable filling tube within the spout, and a vent tube carried by the filling tube and movable bodily within said slot; of levers centrally pivoted to said ears and bearing at their lower ends normally against the tube, springs between the upper ends of the levers and the spout, and means for adjusting the tension of the springs, as and for the purpose set forth.

7. In a filling machine, the combination with a delivery spout having ears on its sides and an upright slot in one side interposed between the ears, a longitudinally movable fill-

ing tube within the spout, and a vent tube carried by the filling tube and movable bodily within said slot; of clamps consisting of levers pivoted to said ears, and springs operating the levers so as to engage the shoulder on a bottle neck at points quartering to the vent tube, as and for the purpose set forth.

8. In a filling machine, the combination of a receptacle for the material to be filled, a rotary movable discharge tube connected to the receptacle, a drip or vent tube opening from the article being filled, a rotary chamber for receiving the material discharged from the drip tube, and a valve for normally closing the discharge tube, substantially as described.

9. In a filling machine, the combination with a rotary receptacle, an annular series of spouts carried thereby and provided with radial upright slots, and an annular chamber supported beneath said receptacle; of longitudinally movable filling tubes within the spouts, means for holding them normally closed, and a downwardly opening vent tube carried by each filling tube with its body projecting through the slot in the spout and its outer end delivering into said annular chamber, as and for the purpose set forth.

In testimony whereof we have hereunto signed our names, in the presence of two attesting witnesses, at Rochester, in the county of Monroe, in the State of New York, this 12th day of December, 1893.

FRED WALLIS.
GEORGE GALBRAITH.

Witnesses:
HAMPDEN HYDE,
CLARK H. NORTON.