No. 766,329. PATENTED AUG. 2, 1904.

J. CUNNING.

MULTIPLE CAN FILLING MACHINE.

APPLICATION FILED MAY 8, 1903.

NO MODEL.

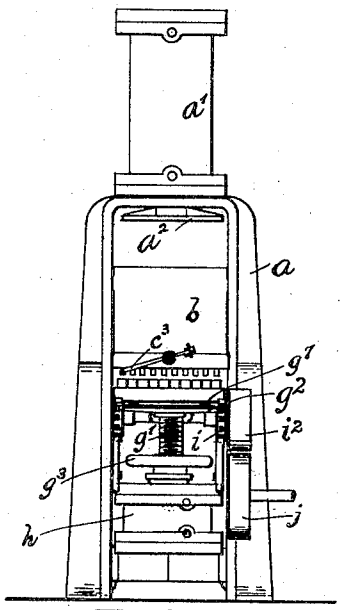


Fig. 1

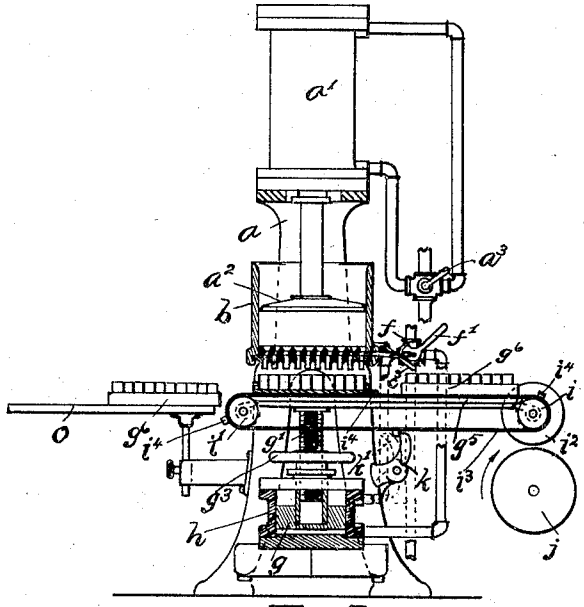


Fig. 2.

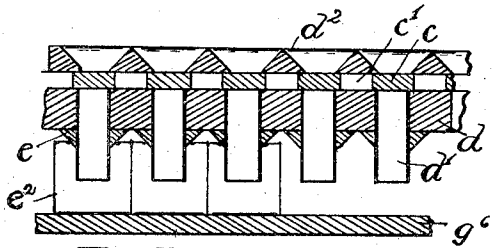


Fig. 3.

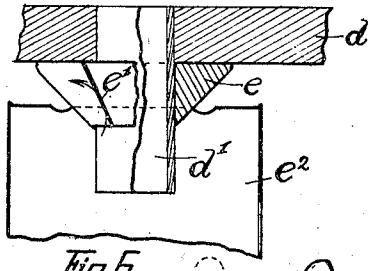


Fig. 6.

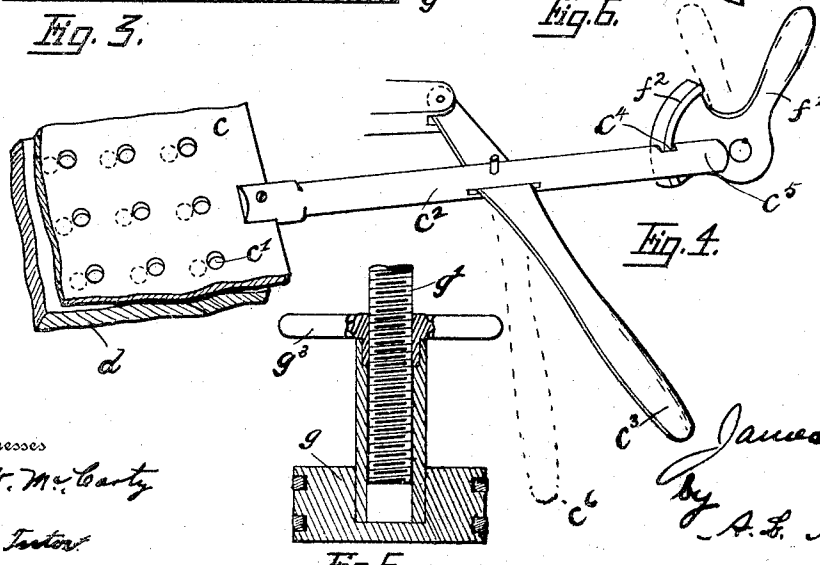


Fig. 4.

Fig. 5.

Witnesses

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No. 766,329. Patented August 2, 1904.

UNITED STATES PATENT OFFICE.

JAMES CUNNING, OF INDIANAPOLIS, INDIANA.

MULTIPLE-CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 766,329, dated August 2, 1904.

Application filed May 8, 1903. Serial No. 156,162. (No model.)

To all whom it may concern:

Be it known that I, JAMES CUNNING, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Multiple-Can-Filling Machines, set forth in the following specification and illustrated in the accompanying drawings, in which similar letters of reference throughout the different figures represent similar parts.

My invention relates in a general way to devices and means for filling cans with any suitable fluid or semifluid products generally, and has for its objects rapidity, efficiency, cleanliness, economy, and labor-saving qualities in its use, ready adaptation or adjustment to different sizes of jars or cans to be filled, utilizing, preferably, steam or compressed-air pressures to operate the machine, in which I have provided a compression-cylinder and a receiving chamber or cylinder below it, a double-acting piston mounted in the former and directly connected, by means of piston-rod, to and operating a plunger in the latter said chamber, that pressure may be readily given to any product placed in the receiving-chamber to compress said product into cans or jars through a series of nozzles provided in latter chamber and which are controlled by suitable cut-off-valve mechanism. In order that the greatest number of cans may be filled at one time, I have preferred to use a square receiving-chamber, and I have provided a cylinder below said chamber to support and operate a suitable table, giving it a vertical movement sufficient that trays containing a number of cans are readily placed under the machine and pressed up against the multiple-nozzle plate to be filled, the nozzles being placed equidistant that they range with the cans in the trays and will enter the mouths thereof readily, and after filling the table is quickly lowered for the removal of the filled tray, to be replaced by a tray of empties. For the adjustment of the operating distance of the table from the receiving-chamber I have provided an adjustable piston rod or support between the table-supporting piston and the table, whereby the latter may be held within a higher or lower range that cans of various heights within reasonable limits may be adjusted for.

A further object is means of engagement between the valve controlling fluid-pressure under the table-supporting piston and the mechanism operating the valve-plate controlling the nozzles.

A further object is means for automatically moving the trays of empty cans to position for filling and at the same time discharging the filled-can trays.

In the drawings, Figure 1 is a partial end elevation of my device with parts removed. Fig. 2 is broken side elevation, partly in section. Fig. 3 is a detached broken sectional view of nozzle and valve-plate and guide-plate. Fig. 4 is a perspective broken detached view of the nozzle-controlling valve and the means connecting between this valve and the valve controlling the table-operating piston. Fig. 5 is an enlarged sectional view of the said table-operating piston and adjusting device. Fig. 6 is an enlarged detached view of multiple-nozzle plate and sealing-cone.

In the descriptive characters, a represents the frame; a', the main cylinder; a^2, the plunger operating in the receiving-chamber b.

a^3 is the valve controlling the piston in main cylinder a'.

c is a cut-off-valve plate provided with an opening c', corresponding and registering with each nozzle. d^2 is a guide-plate protecting said valve-plate and providing sloping or funnel-shaped openings to the nozzle-openings. c^2 is the stem of said valve-plate, provided with an operating-lever c^3.

f is a valve controlling the fluid-pressure actuating the piston g in cylinder h and is provided with a lever f' and a cam f^2, adapted to engage with a recess c^4, cut through side of valve-stem c^2 when the nozzles are closed, that the steam or air pressure provided under the piston g to raise and hold the table may be released only when the nozzles are closed, and also that while the cam f^2 is in engagement with said slot that the valve-plate c cannot be moved to open the said nozzles and that the said cam must first be moved so as to be disengaged from said slot c^4, at which

position of valve air-pressure is again admitted under the piston g to elevate the table with tray and cans to the nozzles, whereafter the valve-plate may be operated again by moving lever c^3 to position c^6, and when cans are filled said valve-plate is moved back, again closing the nozzles before the air-valve f can be closed that pressure under latter said piston is released, allowing the table, with tray and cans that are filled, to be lowered from the filling-nozzles, and until the valve-plate is moved back to close said nozzles the air-valve cannot be closed, as the cam f^2 would strike the stem c^2 on projecting end c^5. By these limitations to operation given to the latter said valve and valve-plate by such interlocking means prevent the accidental discharge of the product to be filled in the cans upon the table or floor when the cans are not in position on the nozzles for filling.

The sealing and adjusting cone or collar e has a slight groove e' cut at side, so when the edge of mouth of the can e^2 joins it that the joining of surfaces will not be so absolutely air-tight that there is no escape for the air contained in the can, which otherwise would cause resistance to filling the cans.

The piston g is provided with an adjustable piston-rod section g', connected to under side of table g^2 and being threaded and extending down into the hollow piston-rod section g^4, which is provided at its upper end with an adjusting-wheel threaded at its bore to fit and engage with the thread on said adjustable section g' of piston-rod, whereby the table is readily raised or lowered relatively to its operating-piston g that different heights of cans may be filled. On the table I have provided an automatic shifting apparatus that will move the trays of cans deposited upon the table at g^5 to the proper position beneath the nozzles that the table may be elevated, the cans filled, and again lowered, when the next tray g^6, placed at g^5 on strips g^7, is moved to filling position, and at the same time the former filled tray is moved away to the table o and the operations continued.

The carrier-wheels i and i', mounted rotatively at ends of table g^2 and chains i^3, is carried by said wheels and stops or spacing-block i^4, fixed on said chains at equidistant points and adapted to move at equal rates or equal distances. A friction-wheel i^2 is mounted on the axle on one set of the carrier-wheels at one end of the table, and a rotating friction-wheel j is provided below the wheel i^2 in such relation thereto that when the table is lowered after a tray of cans has been filled that the wheel i^2 comes into light frictional contact with the wheel j and is thereby rotated the distance of the spaces between the stops on the chains, the said stops successively coming in contact with the hinged weighted tripping-catch k, and when the table is again elevated the contact between said friction-wheels ceases and the stop i^4, in contact with the tripping-catch, is disengaged therefrom and catch drops back to position k', and when the table is again lowered that said friction-wheels come into contact the carrier-chains are again free to go forward the distance of one division between said stops, pushing a tray of filled cans on the table o and another tray of empties beneath the filling-nozzles.

In the application of my invention changes might be made, and I hold myself at liberty to make any such alterations as fall fairly within the spirit and scope of my invention; and

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

1. In a can-filling machine, a receptacle, a nozzle-plate provided with suitable nozzles at bottom of said receptacle, a valve-plate adapted to close the said nozzles at intervals, means to raise and support cans to be filled to said nozzles, a valve controlling said means to raise and support cans to be filled and interlocking means between the said valve-plate and said valve for the purposes set forth.

2. In a can-filling machine, a receptacle provided at bottom with multiple-nozzle plate, a valve-plate adapted to control each of the nozzles in said nozzle-plate, a fluid-pressure cylinder and vertically-actuated piston therein, a table mounted upon the rod of said piston adapted to support trays of cans to be filled against the sealing means provided on said nozzles.

3. In a can-filling machine, a receptacle provided at bottom with multiple-nozzle plate, a pressure-actuated plunger operating in said receptacle, a valve-plate adapted to control each of said nozzles in said nozzle-plate, a fluid-pressure cylinder and vertically-actuated piston therein, a table mounted upon external end of rod of said piston adapted to support tray of cans against the said nozzles while cans are being filled, and means to raise and lower said table as desired.

4. In a can-filling machine, a receptacle provided at bottom with multiple-nozzle plate and valve-plate adapted to control each of the nozzles in said nozzle-plate, a cylinder with vertically-operating piston fixed below said receptacle and nozzle-plate, a table mounted on and supported by said piston, means of adjustment between said table and said piston, carrying-chains moving over said table, wheels on which said chains are carried mounted rotatively on said table and means for rotating said wheels.

5. In a can-filling machine, a receptacle with plunger operating therein, a multiple-nozzle plate at bottom of said receptacle, a vertically-moving table operating below said nozzle-plate, chain-wheels mounted rigidly on axles journaled at each end of said table, shifting-chains mounted on said chain-wheels and adapted to travel at certain intervals and

equal distances, stops provided at equal distances on said chains and at parallel points with one another, a friction-wheel provided on the axle of either pair of said chain-wheels, a rotating driving friction-wheel journaled to rotate in such relation below former said friction-wheel that when the table is lowered to its lower point of movement the latter said wheel comes into frictional contact with said driving friction-wheel whereby the chains are driven forward, a tripping hinged catch mounted at a fixed point below the table and chains adapted to catch the stops on the chains that they will be stopped in position that trays of cans carried by them under the nozzles will be in proper range to meet the nozzles when table is elevated.

6. In a can-filling machine a receptacle provided with a power-actuated plunger and at bottom with a multiple-nozzle plate with nozzles, a valve-plate adapted to open or close all nozzles at one time, a table supported by a cylinder provided with a fluid-actuated piston connected to under side of said table, a valve distributing fluid-pressure to said cylinder, interlocking means connecting between said valve and said valve-plate whereby the movements of the valve-plate and said valve are limited as specified and the automatically-operated shifting-chains traversing said table at certain intervals to shift can-trays to and from beneath the nozzles as set forth.

That I claim the foregoing I subscribe my name this 2d day of May, A. D. 1903.

JAMES CUNNING.

Witnesses:

ORA BUNDY,

JAS. N. DUNCAN.