June 25, 1957 E. VANTLANDER 2,796,827

STAMPING APPARATUS

Filed Sept. 8, 1955 5 Sheets-Sheet 1

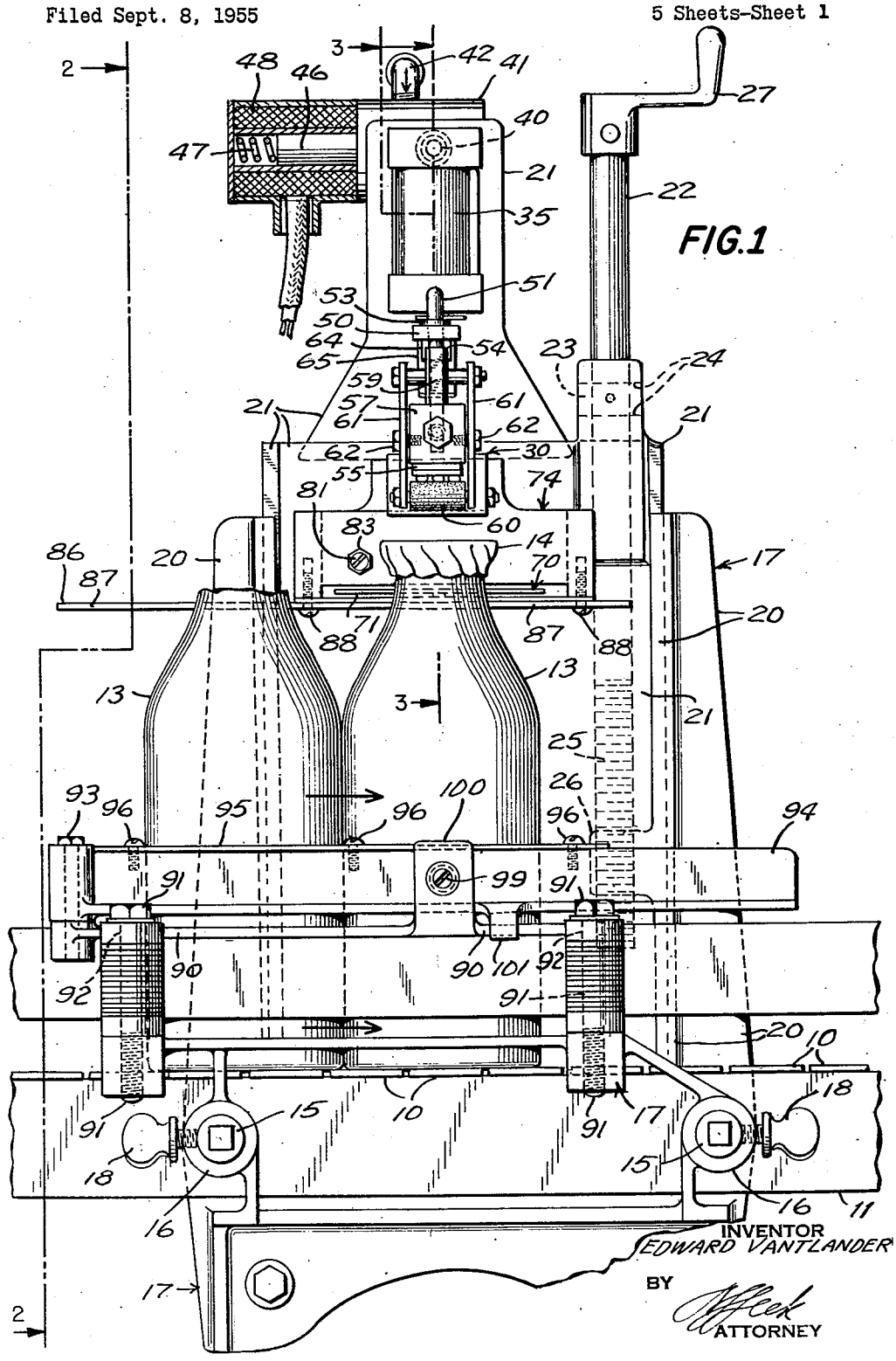


FIG. 1

June 25, 1957 E. VANTLANDER 2,796,827

STAMPING APPARATUS

Filed Sept. 8, 1955 5 Sheets-Sheet 2

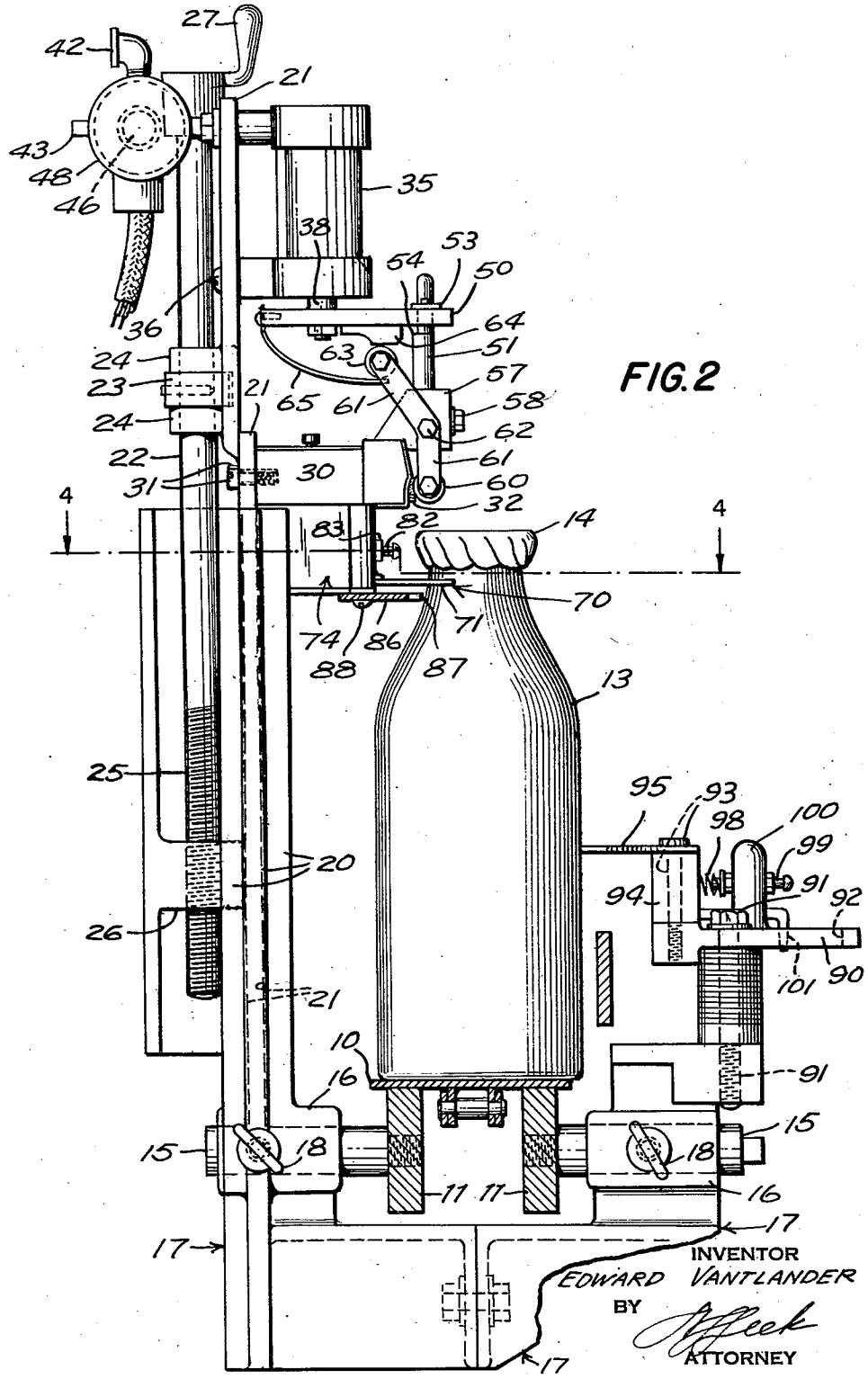


FIG. 2

INVENTOR
EDWARD VANTLANDER
BY
ATTORNEY

June 25, 1957 E. VANTLANDER 2,796,827

STAMPING APPARATUS

Filed Sept. 8, 1955 5 Sheets-Sheet 3

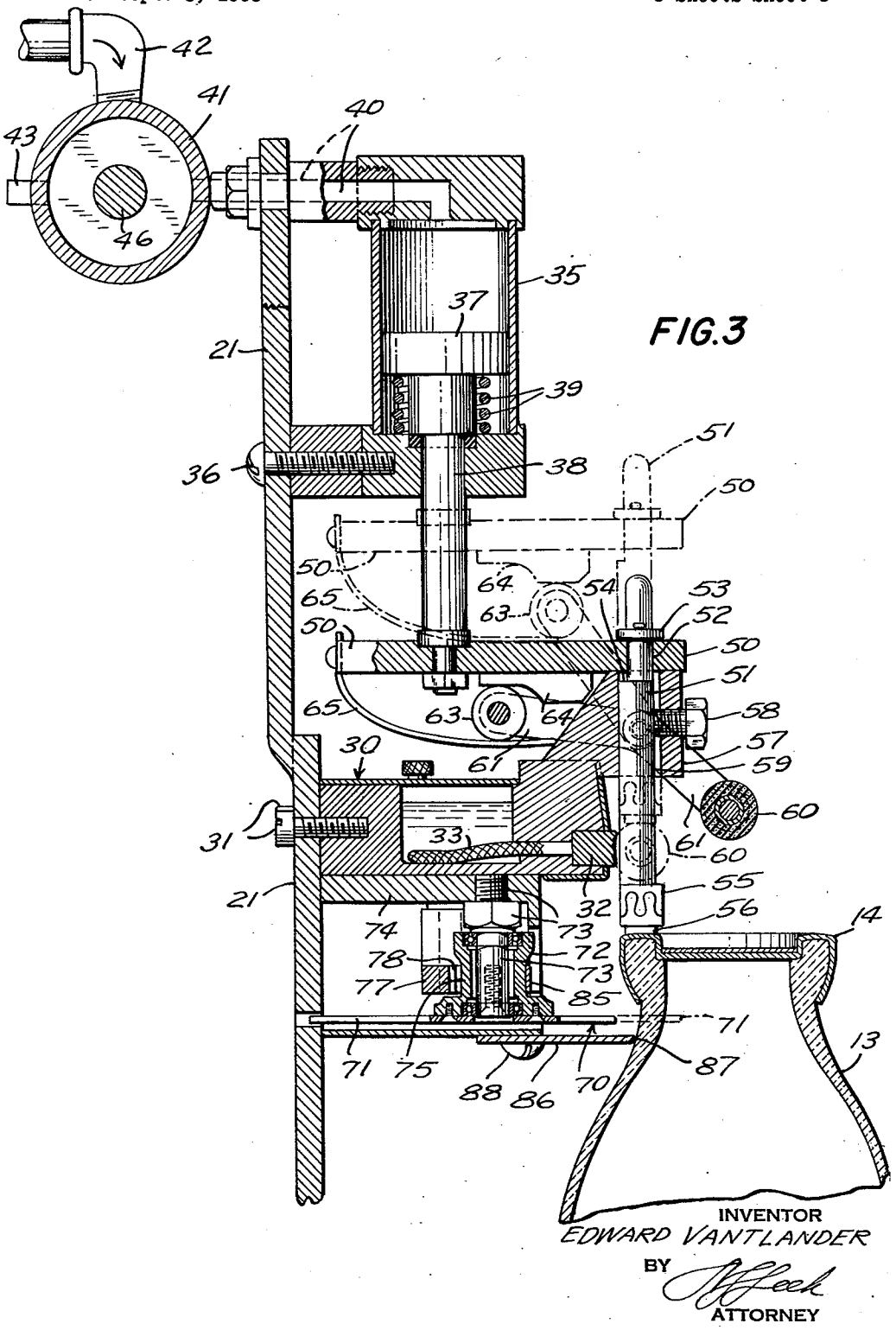


FIG. 3

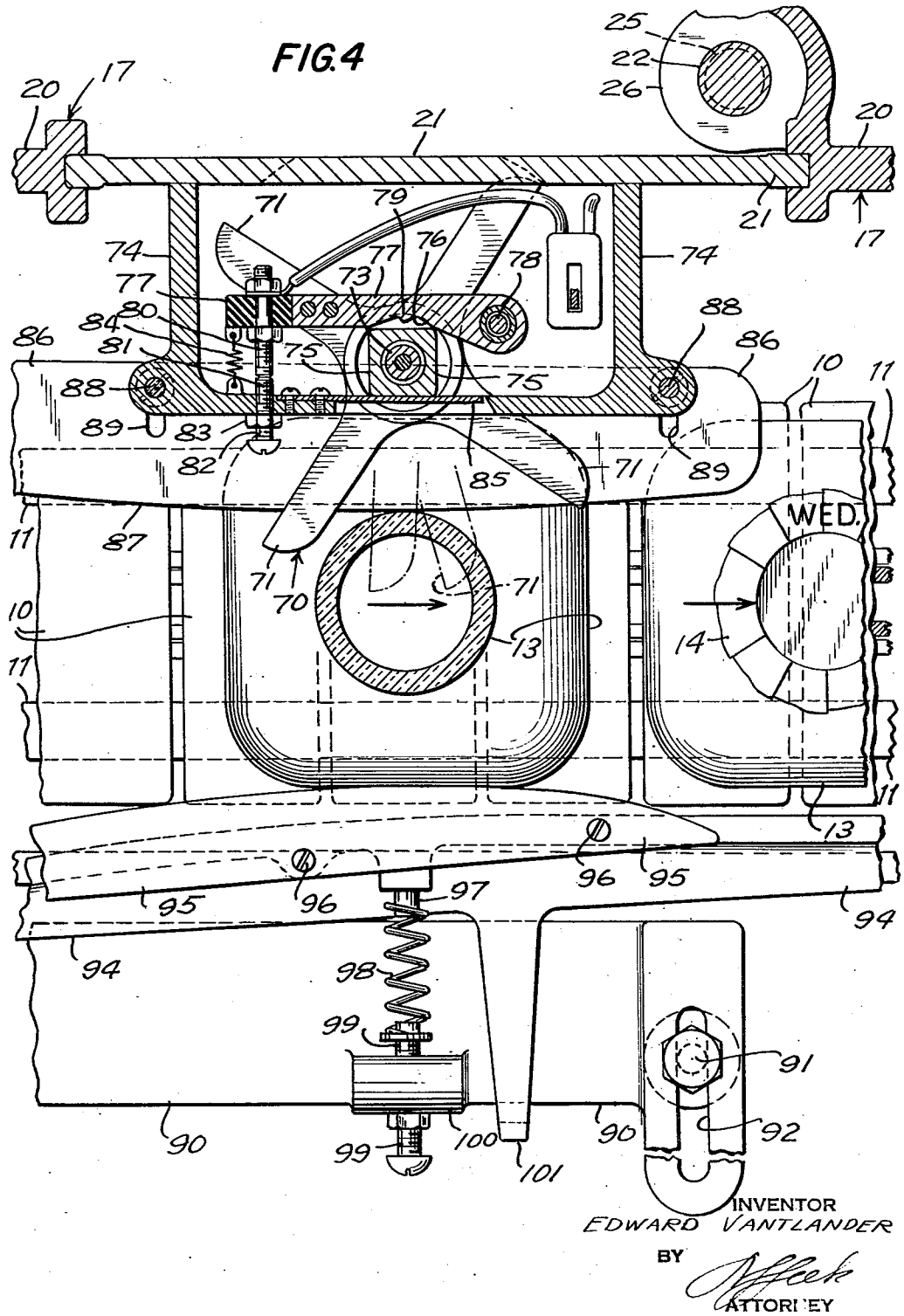
INVENTOR
EDWARD VANTLANDER
BY
ATTORNEY

June 25, 1957 E. VANTLANDER 2,796,827

STAMPING APPARATUS

Filed Sept. 8, 1955 5 Sheets-Sheet 4

FIG. 4



INVENTOR
EDWARD VANTLANDER
BY
ATTORNEY

June 25, 1957 E. VANTLANDER 2,796,827

STAMPING APPARATUS

Filed Sept. 8, 1955 5 Sheets-Sheet 5

FIG. 5.

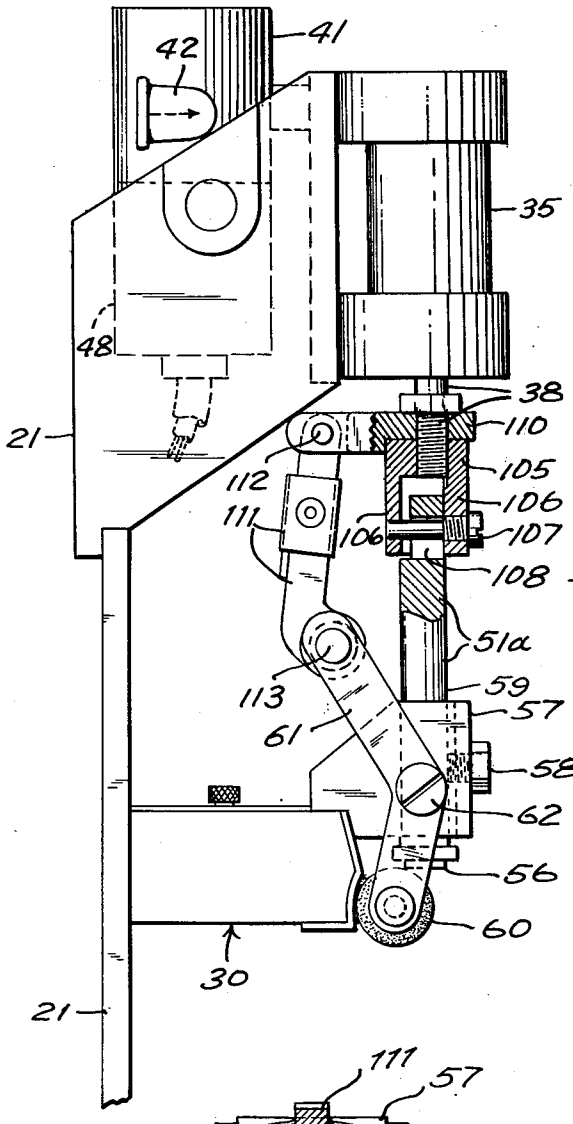
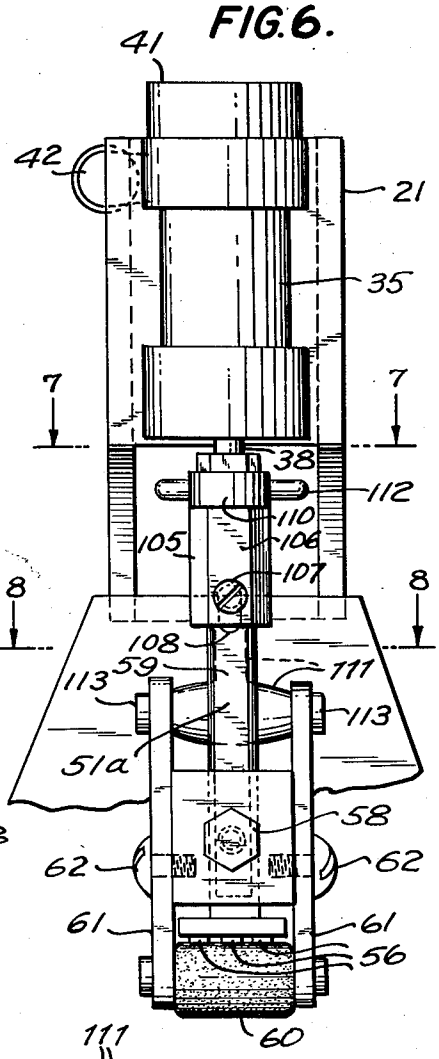


FIG. 6.



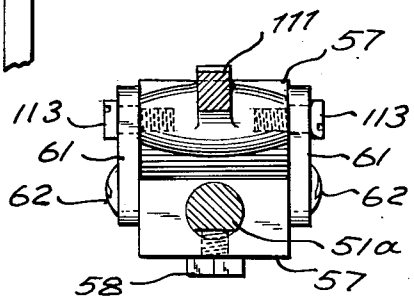


FIG. 8.

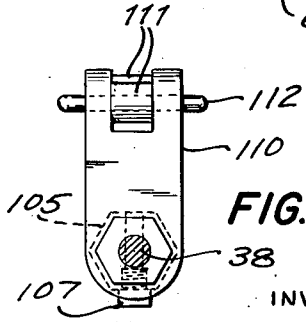


FIG. 7.

INVENTOR
EDWARD VANTLANDER

BY

ATTORNEY

United States Patent Office 2,796,827
Patented June 25, 1957

2,796,827

STAMPING APPARATUS

Edward Vantlander, Astoria, N. Y., assignor to American Seal-Kap Corporation of Delaware, Wilmington, Del., a corporation of Delaware

Application September 8, 1955, Serial No. 533,216

2 Claims. (Cl. 101—44)

This invention relates to stamping apparatus and more particularly to an apparatus for stamping a date or the like upon container tops as filled containers are fed continuously past the stamping station.

An object of the invention is to provide an apparatus of the above type having novel and improved characteristics.

A more specific object is to provide an apparatus for stamping a date upon mild bottle caps as the filled and capped bottles are fed past a stamping station.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention a stamping head is mounted on a plunger adapted to move downwardly to engage the top of the container in a stamping stroke as the container passes the stamping station. An ink roller engages the type face when the stamping head is in retracted position and is timed to clear the path of the stamping head before the initiation of the stamping stroke. The actuation of the stamping mechanism is controlled by a star wheel positioned in the path of the containers and turned by the containers as they advance. In accordance with the invention the actuation of the stamping head is so rapid that the containers are stamped without interrupting their continuous advance.

The nature of the invention and the various details of construction of the parts will be better understood by referring to the following description, taken in connection with the accompanying drawings in which a specific embodiment thereof has been set forth for purposes of illustration.

In the drawings:

Fig. 1 is a front elevation of a portion of a milk bottle filling and capping machine showing a dating head embodying the present invention;

Fig. 2 is a transverse vertical section taken on the line 2—2 of Fig. 1 showing the dating head in side elevation;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1 showing the details of the dating head;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2;

Fig. 5 is a side elevation of the dating head and operating mechanism, illustrating a further embodiment of the invention;

Fig. 6 is a front elevation thereof; and

Figs. 7 and 8 are horizontal sections taken along the lines 7—7 and 8—8 respectively of Fig. 6.

In accordance with the present invention the dating mechanism is shown as applied to a milk bottling machine having a traveling conveyor **10** supported on stationary rails **11** and adapted to convey past a stamping or dating station a series of milk bottles **13** to which caps **14** have been applied. The rails **11** are shown as being adjustable for various widths of conveyors. For this purpose the rails **11** are mounted on rods **15** which are slidably mounted in bosses **16** on a split fixed bracket **17** and are adjustable by means of thumb screws **18**.

A pair of vertical U-shaped guides are integral with the fixed bracket **17** and carry a slide plate **21** which is adapted to slide vertically therein and which carries the dating head and associated mechanism to be described. For adjusting the slide plate **21** vertically so as to accommodate the dating head to bottles or other containers of different sizes a shaft **22** is provided which is rotatably secured to the slide plate **21** by means of a pinned collar **23** attached to the shaft **22** and confined between lugs **24** on the slide plate **21** so as to prevent axial movement of the shaft **22** relative to the slide plate. The shaft **22** is provided with a worm thread **25** which engages a lug **26** fixed to one of the U-shaped tracks **20**. A handle **27** is provided for turning the shaft **22** for purposes of adjusting the elevation of the slide plate.

The dating mechanism comprises a housing **30** which forms an ink reservoir for the dating stamp and which is rigidly attached to the slide plate **21** by means of screws **31**. At its forward end the housing **30** carries an ink pad **32** which is fed with the ink from the reservoir by means of wicks **33**, only one of which is shown.

An air cylinder **35** is attached to the plate **21** by means of screw **36**. The cylinder **35** contains a piston **37** connected to a piston rod **38** which projects downwardly from the air cylinder. The piston is normally held in upper position by means of a spring **39** and is forced downwardly by means of air pressure which is supplied to the top of the cylinder **35** through a duct **40** which communicates through an air valve **41** to an inlet pipe **42**. The valve **41** has a vent pipe **43** for venting the cylinder **35** when the air supply is cut off.

The air valve **41** is shown as of the solenoid operated type and is normally biased to open position, that is to a position wherein the air under pressure from the inlet pipe **42** is supplied to the duct **40**. The valve however may be closed and the cylinder **35** vented to the atmosphere through the vent pipe **43** when the solenoid is energized.

The air valve mechanism is shown as including an actuating plunger **46** which is normally urged to the right, as shown in Fig. 1, by means of a spring **47**, but is pulled to the left by magnetic action when solenoid winding **48** is energized.

A bar **50** is attached to the end of the piston rod **38**. A plunger **51** extends slidably through a hole **52** in the bar **50** and is held with a limited amount of lost motion between a collar **53** on the end of the plunger **51** and a shoulder **54** which is formed on the plunger beneath the bar **50**. The plunger **51** carries at its lower end a printing head **55** in which the type **56** is removably secured. The plunger **51** slides in a fixed bracket **57** which is integral with the inkwell housing **30**. The bracket **57** carries a set screw **58** which loosely engages a flattened front portion **59** of the plunger **51** to prevent the plunger from turning, thereby maintaining the type **56** in correct printing position.

An inking roller **60** is mounted for rotation in a pair of arms **61** which are pivoted at **62** to the bracket **57** and which carry at their upper ends a cam roller **63** which engages and is actuated by a cam lug **64** carried by the bar **50**. A spring **65** also carried by the bar **50** engages the bottom of the cam roller **63** to hold the same in engagement with the cam lug **64**. The inking roller **60** is freely rotatable in the arms **61** and is so mounted as to wipe across the bottom face of the type **56** in an inking stroke when the arms **61** are actuated to the position shown in Fig. 3 and to rest beneath the type **56** and against the inking pad **32** when the arms **61** are in retracted position as shown in Figs. 1 and 2 and in dotted lines in Fig. 3.

A star wheel **70**, having a plurality of arms **71** which

are engaged by successive bottles 13 as they are advanced by the conveyor 10, is mounted on a hollow hub 72 which in turn is journaled for rotation on antifriction bearings on a stud 73 carried by a housing 74 which is fixed to the slide 21. The hub 72 carries a cam 75 which is shown in Fig. 4 as substantially square in section and which bears against an arcuate cam surface 76 of an arm 77 which is pivoted at 78 to the housing 74. The cam surface 76 contains a projection 79 which is adapted to be engaged by a corner of the square cam surface 75 as the cam rotates, so as to momentarily raise the contact arm 77. The arm 77 carries an insulated contact 80 which engages a fixed contact 81 carried by the housing 74 and is adjusted by means of a screw thread 82 and lock nut 83, the arrangement being such that the contacts 80 and 81 are normally closed but are momentarily broken when a corner of the square shaped cam 75 engages the projection 79 on the arm 77.

The arm 77 is held in engagement with the cam surface 75 by means of a spring 84. A flat spring 85 is mounted in the housing 74 in a position to engage one of the flat surfaces of the cam 75 so as to hold the cam in fixed position during the printing stroke.

A guide 86 having a curved surface 87 is adapted to engage the neck of the bottle 13 for positioning the bottle accurately under the printing head. The guide 86 is adjustably mounted on the housing 74 by means of screws 88 extending through elongated slots 89 in the guide.

A plate 90 is adjustably mounted on a pair of studs 91 by means of an elongated slot 92 in the plate 90. The studs 91 are fixed to the bracket 17. The plate 90 carries a pin 93 on which an arm 94 is pivotally mounted. A guide plate 95 is attached to the arm 94 by means of screws 96. The arm 94 also carries a pin 97 which is engaged by one end of a spring 98, the other end of which is adjustably secured to a pin 99 which is threaded for adjustment into a lug 100 on the plate 90.

The purpose of the spring 98 and the guide plate 95 is to engage the side of the bottle 13 and to force the bottle into correct stamping position with the neck of the bottle engaging the guide plate 86. A stop member 101 on the bar 94 engages the plate 90 for limiting the inward movement of the bar when no bottle is in stamping position.

The contacts 80 and 81 are connected by leads to control the energization of the solenoid 48 so that the solenoid is energized when the contacts are closed and deenergized when the contacts are open. Since the contacts are normally closed as shown in Fig. 4 the solenoid is normally energized, thereby closing the air valve 41 and venting the top of the air cylinder 41 through vent 43 and allowing the piston 37 to be raised by the spring 39. The printing head 55 is thus retracted as shown in Figs. 1 and 2. In this position of the printing head the inking roller 60 rests against the ink pad 32 and receives ink therefrom.

When a bottle 13 is advanced by the conveyor 10 it engages one of the arms 71 of the star wheel 70 and causes the star wheel to turn. When the bottle reaches stamping position beneath the printing head as shown in Fig. 4 the star wheel has been rotated to a position such that a corner of the square cam 75 engages the projection 79 on the contact arm 77 and momentarily shifts the arm 77 so as to open the contacts 80 and 81. This breaks the energizing circuit of the solenoid 48 and allows the valve 41 to be actuated by the spring 47, thereby supplying air under pressure from the pipe 42 to the top of the air cylinder 35 and forcing the piston 37 and the printing head 55 downwardly until the type 56 engages the top of the bottle cap 14 as shown in full lines in Fig. 3.

When the piston rod 38 moves downwardly the cam lug 64 engages the cam roller 63 on the arms 61 and swings the arms 61 in a direction to cause the ink roller 60 to wipe across the face of the type 56 and then to continue to a position beyond the path of the type 56. The shoulder 54 provides a sufficient amount of lost motion between the bar 50 and the plunger 51 to permit the ink roller 60 to be moved out of the path of the type face before the type face begins to descend in its stamping stroke. Due to the spinning of the ink roller which is caused by the rapid rate at which the roller passes the type face the roller when retracted engages the ink pad 32 in a different position so that the various parts of the roller 60 are inked during the continued operation of the device.

When the contacts 80 and 81 are again closed as a result of continued movement of the star wheel 70 the solenoid 48 is again energized to shift the valve 41 and cut off the supply of air to the top of the cylinder 35, whereupon the piston is retracted to its original position by the spring 39.

In operation, the printing stroke and the return movement of the printing head are so rapid that the top of the bottle cap is stamped while the bottle is in motion on the conveyor and without appreciably interrupting the forward movement of the bottle.

In the form of the invention shown in Figs. 5 to 8 the cylinder 35 and actuating mechanism are similar to that above described and have been given the same reference numbers. The piston rod 38 in this form is threaded at its lower end into a hexagonal block 105 having a pair of ears 106 carrying a pin 107 which engages an elongated slot 108 in the top of the plunger 51*a* which is similar to the plunger 51 above described. The hexagonal member 105 engages a bar 110 to which a link 111 is pivoted at 112. The link 111 is pivoted at 113 to the arms 61 carrying the ink roller 60 as above described.

The arrangement according to this embodiment is such that the downward movement of the bar 110, through the link 111, causes the swinging movement of the arms 61 which is necessary to shift the ink roller past the face of the type in its inking stroke. The elongated slot 108 provides the necessary lost motion to permit the ink roller to clear the face of the type before the beginning of the printing stroke of the plunger 51*a*.

The invention has been shown as applied to mechanism for stamping a date on a cap of a filled milk bottle. It is to be understood however that it is equally applicable to stamping devices for embossing, engraving, or printing data on capped paper cups or containers, or onto the tops of closed containers of any type.

What is claimed is:

1. Apparatus for stamping container tops or the like, comprising conveyor means to convey a series of containers past a stamping station, a vertically movable stamping head at said station having a bottom stamping face to engage the top surface of the containers, a plunger carrying said head, an inking roller, a pivoted arm carrying said roller, an actuating bar movable vertically and having a cam surface to swing said arm for wiping said roller over the bottom surface of said stamping face and shifting the roller laterally out of the path thereof in an inking stroke, said bar having a portion thereof disposed to engage and actuate said plunger in a stamping stroke only after the inking roller has been shifted out of the path of said head, a star wheel positioned to be engaged and turned by the advancing containers as they pass said stamping station, and means controlled by said star wheel to actuate said bar.

2. Apparatus for stamping container tops or the like, comprising conveyor means to convey a series of containers past a stamping station, a vertically movable stamping head at said station having a bottom stamping face to engage the top surface of the containers, a plunger carrying said head, an inking roller, a pivoted arm carrying said roller, an actuating bar movable vertically and having a cam surface to swing said arm for wiping said roller over the bottom surface of said stamping face

and shifting the roller laterally out of the path thereof in an inking stroke, said bar having a portion thereof disposed to engage and actuate said plunger in a stamping stroke only after the inking roller has been shifted out of the path of said head, a star wheel positioned to be engaged and turned by the advancing containers as they pass said stamping station, means controlled by said star wheel to actuate said bar, and an inking pad disposed outside of the path of said head and engaged by said inking roller when said head is in elevated position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,223,610	Pittaluga	Apr. 24, 1917
1,929,703	McDonough	Oct. 10, 1933
2,372,089	Keller et al.	Mar. 20, 1945
2,646,746	Muller	July 28, 1953