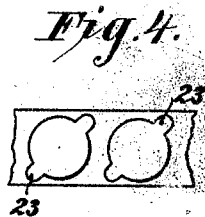
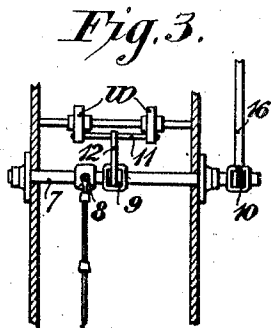
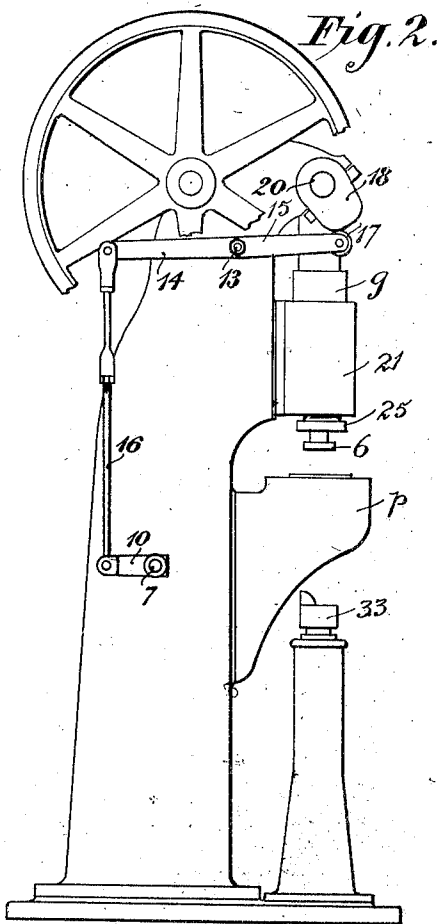


1,043,709.

3 SHEETS—SHEET i.



WITNESSES:

John Murtagh
L. J. Murphy

INVENTOR

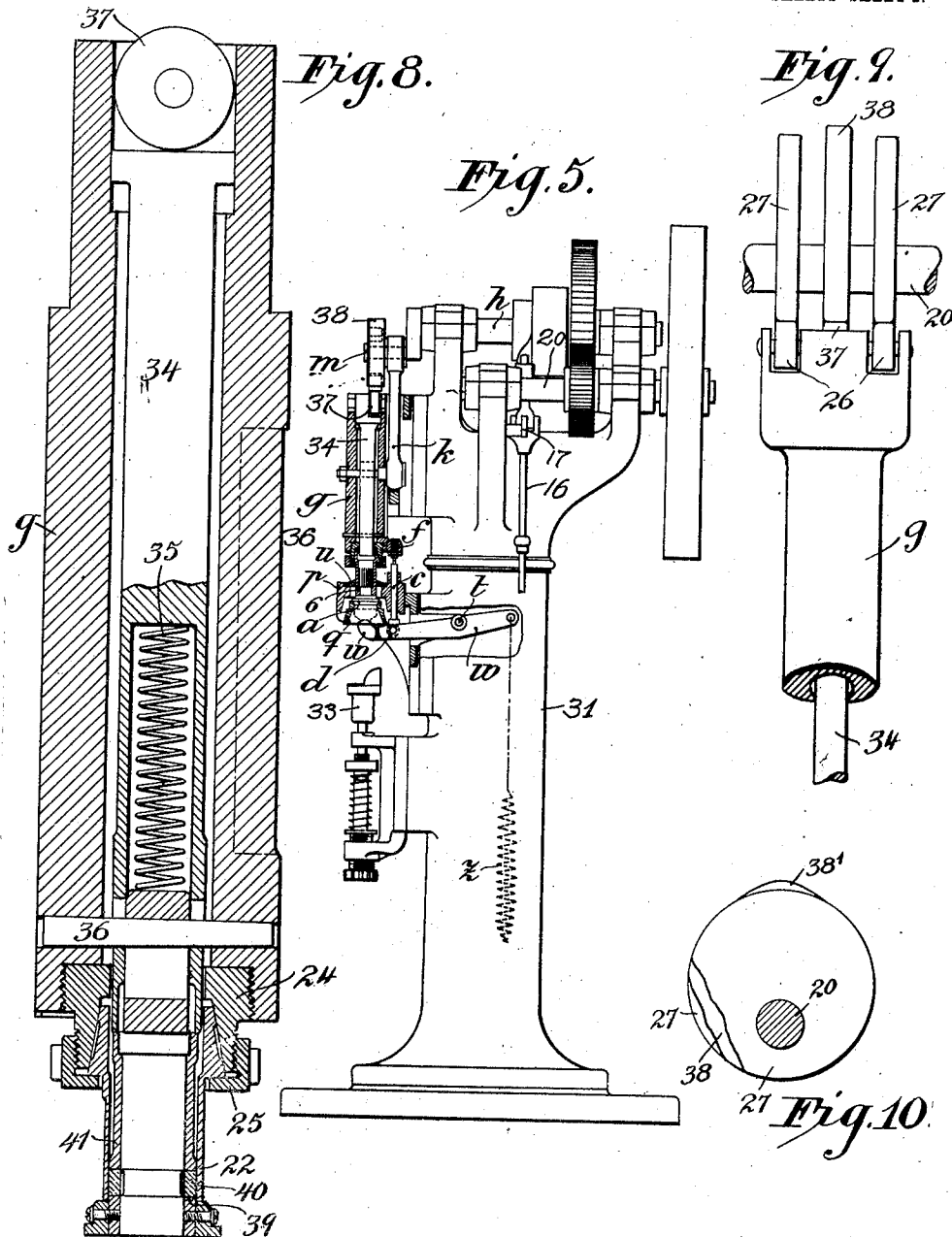
Abel Julius Laurits Larsen
 BY *Gasper Gasper*
 ATTORNEYS

A. J. L. LASSEN.
MACHINE FOR STOPPERING BOTTLES.
APPLICATION FILED JULY 13, 1911.

1,043,709.

Patented Nov. 5, 1912.

3 SHEETS—SHEET 2.



WITNESSES: 6

John Murtagh
J. J. Murphy

INVENTOR:

Axel Julius Laurits Lassen,
By Axel Lassen
ATTORNEYS.

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3 SHEETS—SHEET 3.

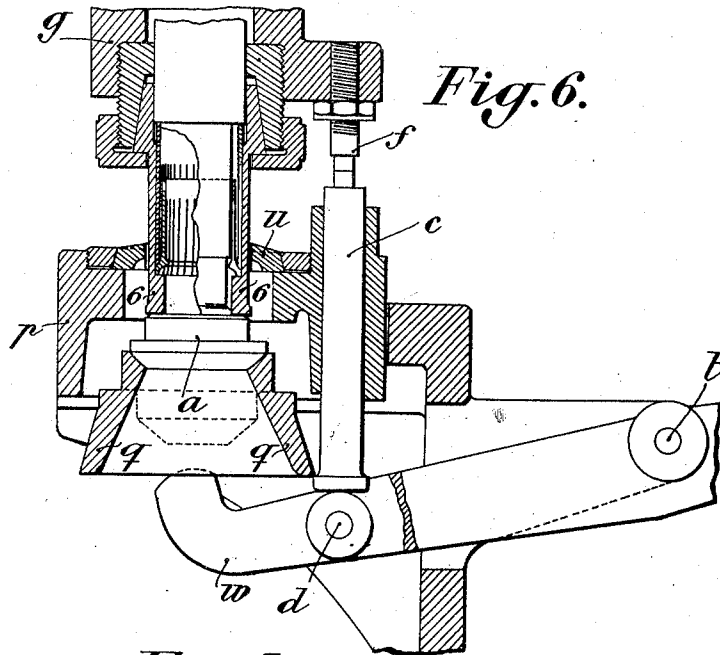


Fig. 6.

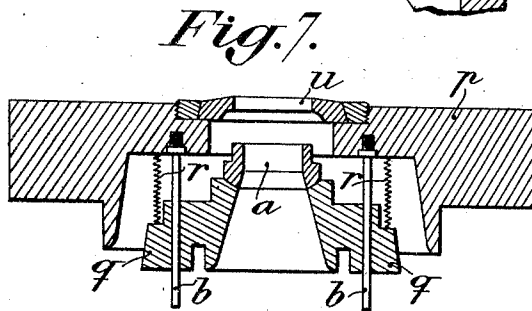


Fig. 7.

WITNESSES:

John M. Mottagh
L. J. Murphy

INVENTOR:

Axel Julius Laurits Lassen.
BY Leopold Gaepe.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

AXEL JULIUS LAURITS LASSEN, OF COPENHAGEN, DENMARK.

MACHINE FOR STOPPERING BOTTLES.

1,043,709.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed July 13, 1911. Serial No. 638,400.

To all whom it may concern:

Be it known that I, AXEL JULIUS LAURITS LASSEN, of No. 5 Aaboulevard, Copenhagen, in the Kingdom of Denmark, have invented certain new and useful Improvements in Machines for Stoppering Bottles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain improvements in the machine for stoppering bottles, for which Letters Patent were obtained by me on Dec. 12, 1911, No. 1,011,630, said improvements being designed with a view of rendering the machine capable of applying 15 cap-blanks to the bottle-neck provided with wings or lugs for facilitating the removal of the cap from the bottle-neck; and for this purpose the invention consists of certain 20 constructional details of a machine for stoppering bottles, which will be fully described hereinafter and then defined in the claims.

In the accompanying drawings, Figure 1 represents a side-elevation with parts in 25 section, and parts broken off, of my improved machine for stoppering bottles, Fig. 2 is a side-elevation of the machine taken from the opposite side, Fig. 3 is a detail rear-view of the spring-actuated lever-mechanism for the yielding clamping-ring, Fig. 4 is a detail top-view of a strip of sheet 30 metal from which two blanks with two diametrical wings or lugs have been punched, Figs. 5, 6 and 7 represent a modified construction of the machine, Fig. 5 showing a side-elevation partly in section, and Figs. 6 and 7 showing the operative parts drawn 35 on a larger scale and in sections taken on planes at right angles to each other, Fig. 8 represents a vertical central section through the tubular reciprocating rod which carries the punch, drawn on a larger scale, Fig. 9 is a front-view of the cams by which the punch-carrying tubular rod is operated, 40 and Fig. 10 is a detail side-view of the cams shown in Fig. 9.

Similar letters of reference indicate the same parts in the different figures of the drawings.

50 Referring to the drawings 6 represents a punch for cutting the blanks for the closing caps of bottles from a strip of metal, preferably aluminum; *u* is a stationary die-ring, which like the punch 6 is so formed as to

cut out blanks having two wings or lugs 55 such as shown in Fig. 4.

q is a movable clamping-ring and *p* a ring-shaped bracket for supporting the clamping ring. The clamping-ring *q* is 60 yieldingly supported on the front ends of two parallel levers *w* which are fulcrumed in the machine frame and connected at their rear-ends by a cross-rod 11 with a pivot-link 12, which latter is connected by a crank-arm 9 with a transverse shaft 7 65 which turns in bearings of the machine-frame and which is provided with a hook 8 to which the upper end of a helical spring *z* is connected. The lower end of the spring *z* is attached to the frame of the machine. 70 The front-ends of the levers *w* support in suitable notches the clamping-ring *q* which is seated in the notches of the levers by knife-edges at its underside. The shaft 7 is extended to the outside of the machine-frame and provided with a crank-arm 10, 75 which is connected by a pivot-rod 16 with the rear-end of a lever 14, 15, that is fulcrumed at 13 to the upper part of the machine-frame. On the front-end of the lever 80 14, 15 is mounted an anti-friction roller 17, that is acted upon by a cam 18, of a shaft 20 which turns in suitable journal-bearings in the upper part of the machine-frame and to which rotary motion is imparted by a 85 suitable power transmitting mechanism. On the shaft 20 is mounted a cam 38 that bears on the upper end of the punch 6 for actuating it at the proper time. The cam 18 has such a shape that it will actuate 90 the proper time the lever 14, 15, and by the connecting rod 16, crank-arm 10, crank 9, and pivot-link 12, and oscillate the levers *w* so as to slightly lower the clamping-ring *q* 95 relatively to the punch 6. By this motion the blank cut by the punch and die-ring is released at its circumference from the pressure of the punch and clamping-ring.

The blanks which are cut from the strip by the punch and die-ring are clearly shown 100 in Fig. 4, in which the wings 23 are arranged at diametrically opposite points of the blanks and located in the angular portions of the strip, respectively at opposite sides of the same, so that no greater quantity of metal 105 is necessary for blanks with wings as for blanks without wings. When the cap is drawn down over the bottle-neck, the wings

would be torn off or injured owing to their smaller degree of resistance, if the clamping-ring were not released from the blank at the time when the cap is drawn out from between the punch and clamping-ring.

In the modified construction of the machine shown in Figs. 5 to 7, the helical spring *z* is connected directly with the rear-ends of the fulcrumed levers while the clamping-ring *g* is provided with a loose ring *a*, guided on vertical pins *b*, Fig. 7, and supported on the front ends of the levers *w*. Between the levers *w* and in front of its fulcrum *t* is located a roller *d* on which rests the lower end of a vertically-sliding rod *c* which is guided in a sleeve of the bracket *p* and acted upon at its upper end by an adjustable abutment *f*, which is attached to the guide sleeve *g* for the punch 6. The guide-sleeve *g* is guided in the machine-frame and moved up and down during the rotation of the shaft *h* by means of a connecting-rod *k* which is pivoted at its upper end to a crank-pin *m* on the shaft *h*.

When the guide-sleeve *g* with the punch 6 is moved downward, the abutment *f* will, before the punch 6 reaches its lowermost position, bear against the rod *c* which pressure will be transferred to the roller *d*. As this roller is located nearer to the fulcrum *t* of the levers *w* than the front-ends of the levers supporting the clamping-ring *g*, the front-ends of the levers *w* will move away from the clamping-ring *g*. In order that the clamping-ring which would be without support does not fall down, it is held suspended by the springs *r*, Fig. 7. The pressure of the ring *a* against the lower surface of the punch will therefore cease and the wings of the blank which are clamped between the punch and clamping-ring can be drawn down without being subjected to injury or torn off. As soon as the punch 6 is raised again, the action of the rod *c* upon the levers *w* will cease, and they will by the tension of the spring *z*, be returned to their initial position.

The tubular rod *g* is guided in a fixed sleeve 21 supported on the frame. The punch 6 is attached to the lower end of a tubular piece 22 which is provided at its upper end with a tapering piece which is fitted into a corresponding recess of a nut 24 that is screwed into the lower end of the tubular-rod *g*. A flange nut 25 is screwed over the lower end of the nut 24, the inwardly-bent flange engaging the lower end of the conical portion of the tubular piece 22. The upper end of the tubular rod *g* is provided with two recesses in which are located two rollers 26, which are shown in Fig. 9, and acted upon by two cams 27 mounted on the shaft 20 so as to lower at the proper time the tubular rod *g* together with the punch 6 at the lower end of the

same. The rod *g* is pressed against the cams 27 by means of a lever 29 which is fulcrumed at 30 to the casing 31 of the machine. The inner end of the lever 29 is provided with a toothed segment 28 which meshes with a rack arranged on the tubular rod *g*. The outer end of the lever 29 is acted upon by a helical spring 32, as shown in dotted line in Fig. 1.

The bottle which is to be closed by a cap, is placed on the support 33 and extends with its head into the hollow space inclosed by the clamping-ring *g*. The upper edge of the bottle-head is located on a level with the upper edge of the clamping-ring. The metal strip from which the cap has to be cut by the punch, is moved over the clamping-ring and as the punch 6 is moved in downward direction, a blank of the shape shown in Fig. 4 is cut from the strip, the web of the blank being held between the punch and the yielding clamping-ring so that the tubular punch can pass over the bottle-head and form the cap around the same. The cap is tightly applied to the bottle-head by the following arrangement for illustration, to which however no claim is here made, and any other suitable form of apparatus may be employed: In the tubular rod *g* is arranged a slide-rod 34 which is pressed in upward direction by means of a helical spring 35 that is arranged in the hollow lower portion of the slide-rod by means of a transverse key 36 which passes through the lower part of the tubular rod *g*. The upper end of the rod 34 is recessed and provided with a roller 37 which is acted upon by a cam 38 mounted on the shaft 20, as shown in Figs. 9 and 10. The cam 38 is circular for the greater part of its circumference but provided at one point of the same with a small outward bulge 38', shown in Fig. 10, by which the cam 38 can move the roller 37 and the slide-rod 34 in downward direction independently of the punch 6 and its supporting-tube 22. The tube 22 is provided at its interior with a shoulder 39 which supports a rubber ring 40. On this ring rests a tube 41 which extends up to the lower edge of the slide-rod 34. When this latter is acted on by its cam 38, the pressure is transmitted to the elastic ring 40. As soon as the punch 6 arrives in its lowermost position, the elastic ring 40 is located adjacent to that part of the cap that has to be pressed into the grooves of the bottle-head. When, therefore, the slide-rod 34 is pressed in downward direction, the ring 40 is compressed and bulged in inward direction so that the same presses around the downwardly-drawn portion of the cap and forces it snugly into the grooves on the bottle-head. On the upward motion of the tubular rod *g*, the tube 41 and the rubber ring 40 are released from the bottle-head and the parts returned to their former po-

sition ready for the next action of the operative parts in cutting out a blank, drawing it down over and forming it around the grooves of the bottle-head.

5 I claim:

1. In a machine for stoppering bottles with cap-blanks having wings or lugs, the combination, with a vertically-reciprocating tubular-rod, a blank-cutting punch at the 10 lower end of the same, and means for reciprocating said rod and punch, of a stationary die-ring, a clamping-ring for the blank, and means applied to said clamping-ring for lowering the same when the blank 15 is moved upwardly into the punch for preventing the tearing off of the wings or lugs.

2. In a machine for stoppering bottles with cap-blanks having wings or lugs, the combination, with a tubular-rod, a cutting-punch at the lower end of the same, and means for reciprocating said rod and punch, 20 of a stationary die-ring, said punch and ring corresponding to the caps to be cut, a clamping-ring below said die-ring, fulcrumed levers supporting the clamping-ring, and 25 means for releasing the pressure of the levers on the clamping-ring for permitting the blank to be moved into the punch and the wings to be drawn over the bottle-neck 30 without being torn off or injured.

3. In a machine for stoppering bottles with cap-blanks having wings or lugs, the combination of the reciprocating cutting punch, of a stationary die-ring, a clamping 35 ring for the blank, fulcrumed and spring-actuated levers supporting the clamping-ring, a shaft having a cam, and motion-transmitting mechanism between said cam

and the levers for releasing the clamping ring from the punch when drawing the 40 blank over the bottle-neck without tearing off the wings.

4. In a machine for stoppering bottles with cap blanks having wings or lugs, the combination, of a reciprocating punch, a 45 stationary die-ring, a clamping-ring below the same for holding the blank after being cut, fulcrumed levers for supporting the clamping ring at their inner ends, a spring connected with the outer ends of the levers, 50 a shaft having a cam, and motion transmitting means between the clamping-ring and cam for removing the clamping-ring from the punch when drawing the blank over the bottle-neck, without tearing off the wings. 55

5. In a machine for stoppering bottles with cap blanks having wings or lugs, the combination, of a punch, a reciprocating guide-sleeve supporting the punch, a stationary 60 die-ring, a clamping ring for holding the blank, fulcrumed and spring-actuated levers for supporting the clamping-ring, said levers having a roller in front of their fulcrum, a slide-rod above said roller, an abutment on the guide-sleeve, acting upon said slide-rod, 65 and means for reciprocating said punch and guide-sleeve for releasing the clamping-ring at the proper time from the punch.

In testimony, that I claim the foregoing as my invention, I have signed my name in 70 presence of two subscribing witnesses.

AXEL JULIUS LAURITS LASSEN.

Witnesses:

ERNEST BOUTARD,
P. HOFMAN-BANG.