B. ADRIANCE & A. CALLESON.

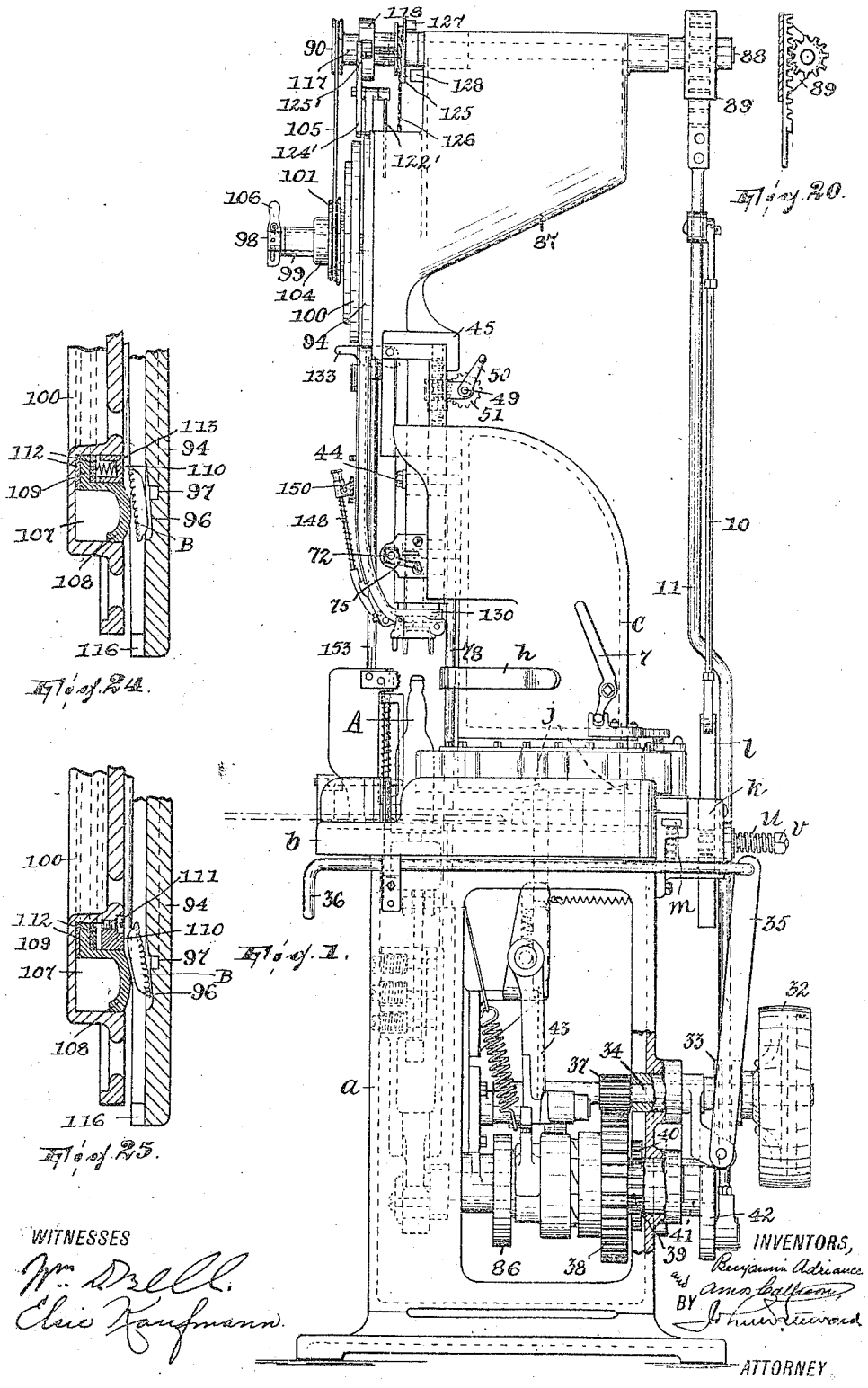
BOTTLE CAPPING MACHINE.

APPLICATION FILED APR. 9, 1909.

1,043,286.

Patented Nov. 5, 1912.

8 SHEETS—SHEET 1.



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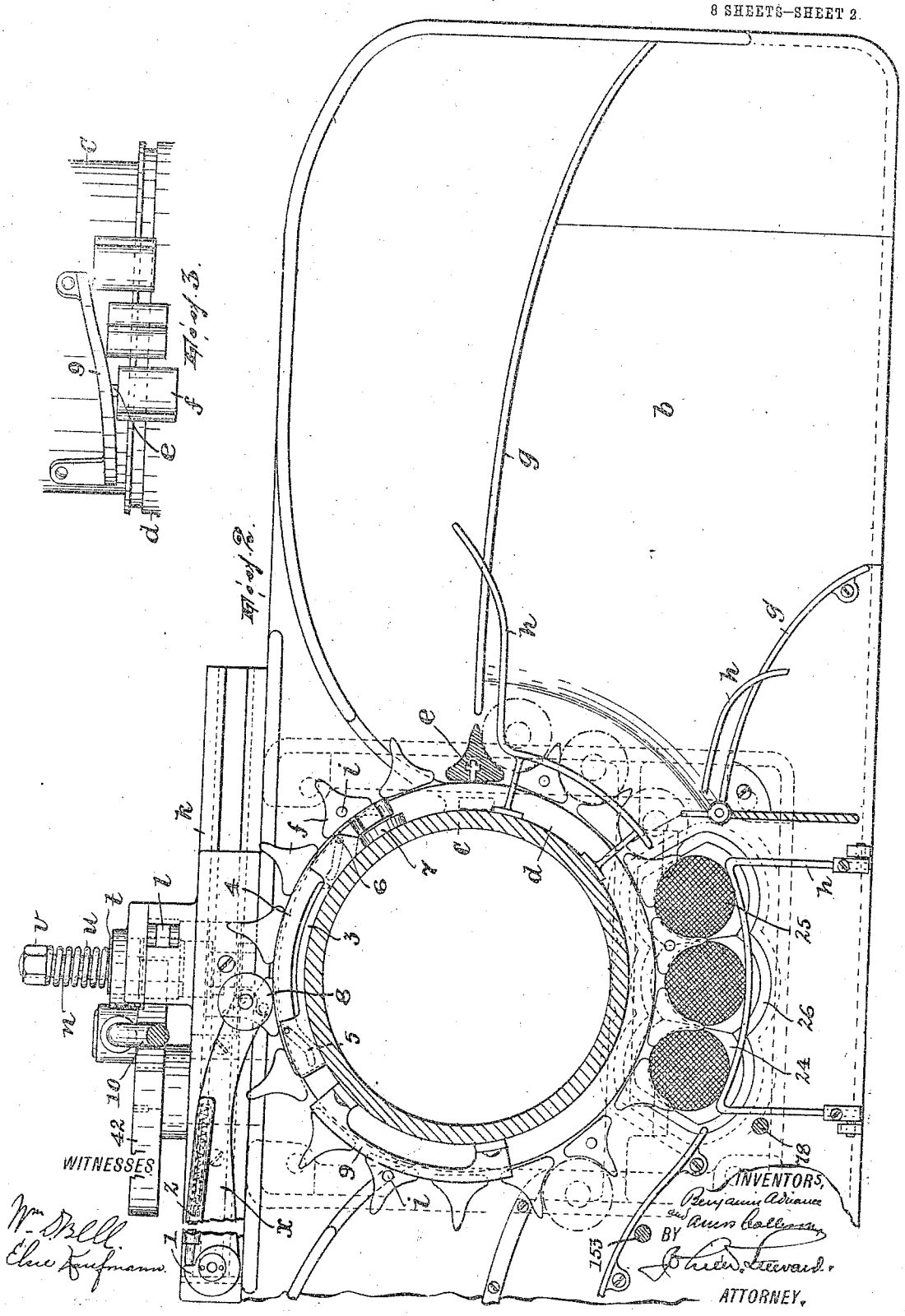

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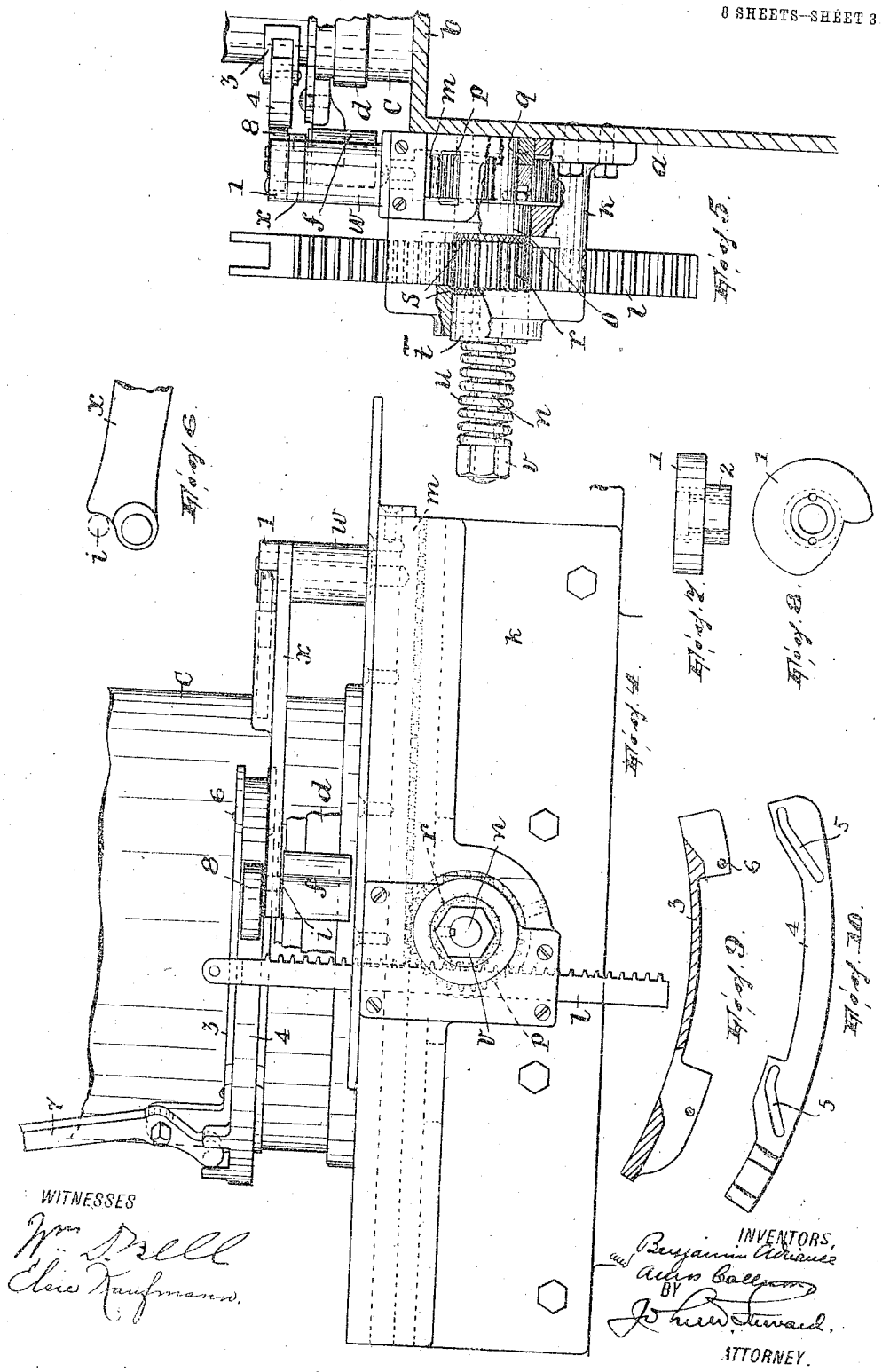
8 SHEETS—SHEET 3



WITNESSES

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8 SHEETS—SHEET 4

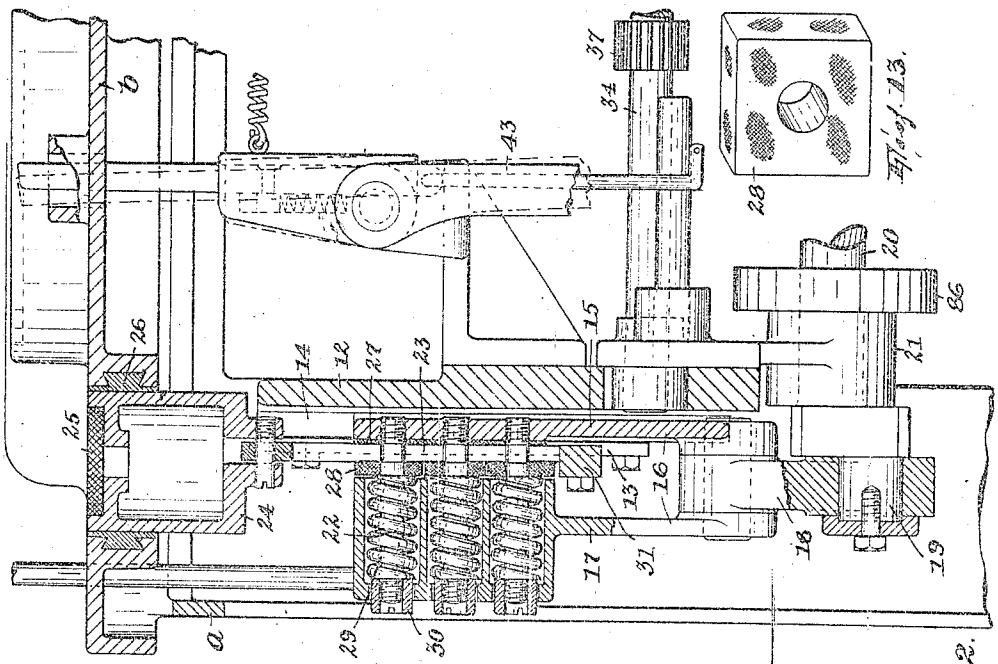

Fig. 12.

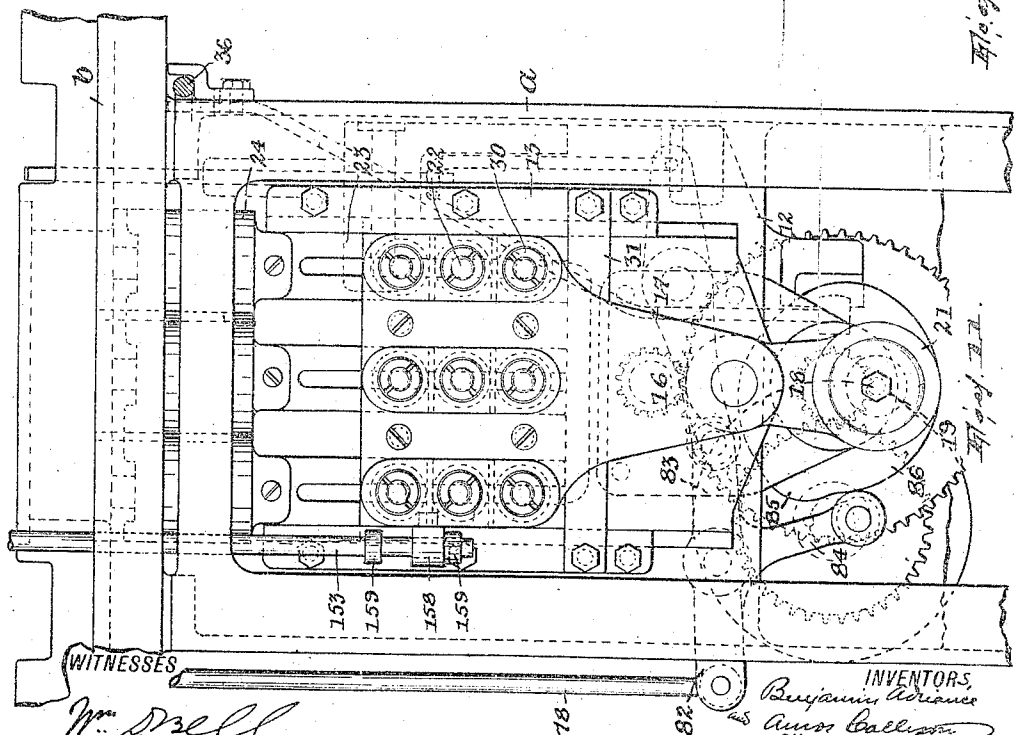

Fig. 11.

WITNESSES

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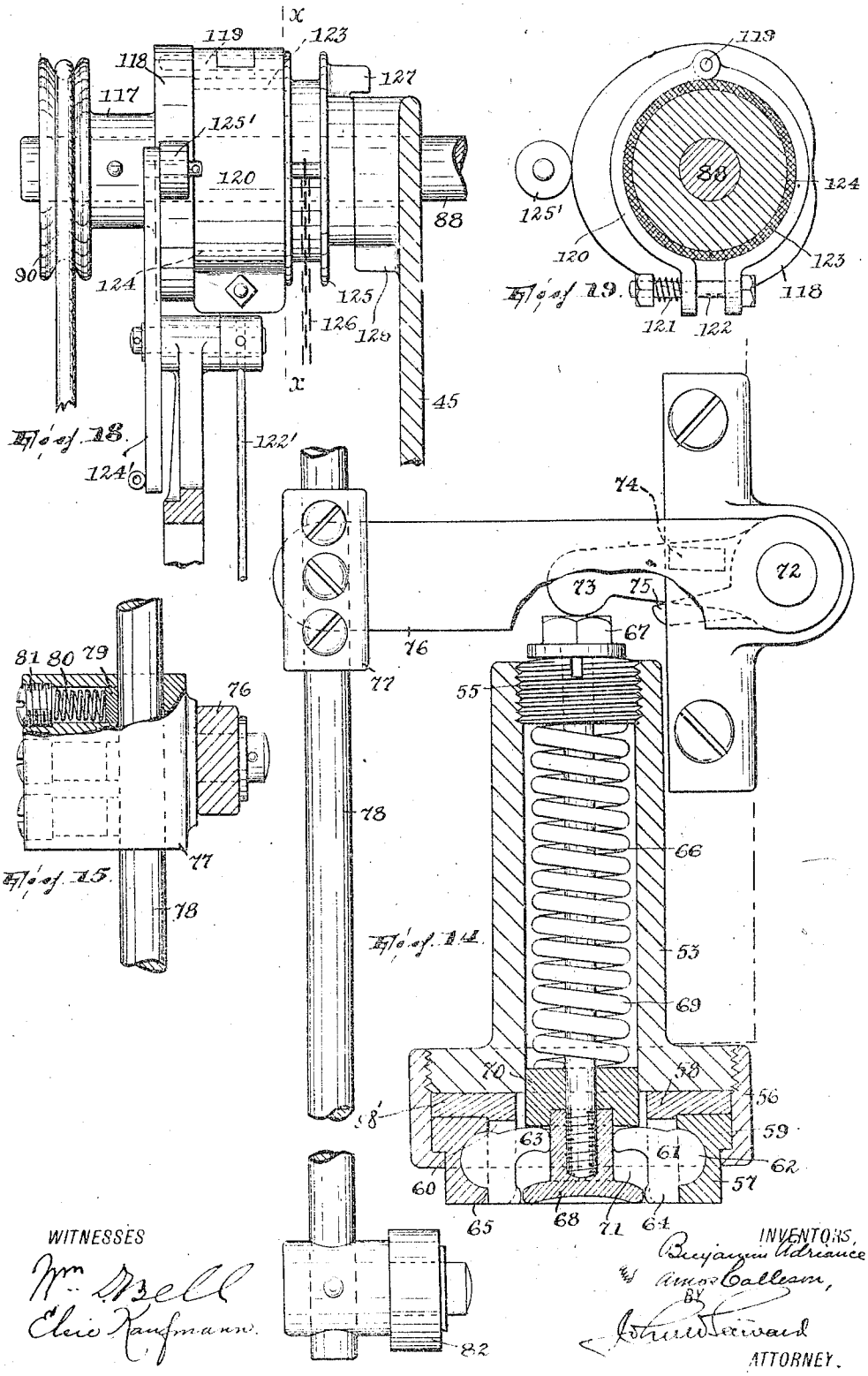
8 SHEETS—SHEET 5



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8 SHEETS-SHEET 6

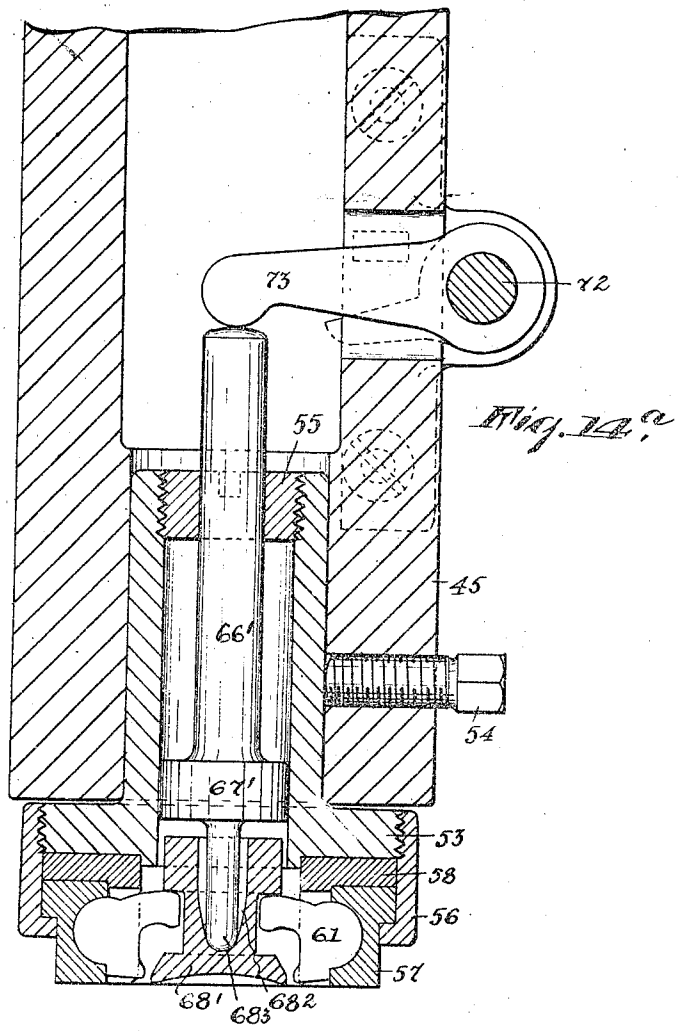

Fig. 14.a

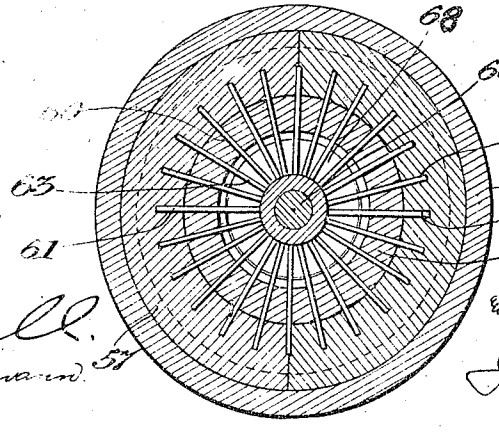

Fig. 14.b

WITNESSES

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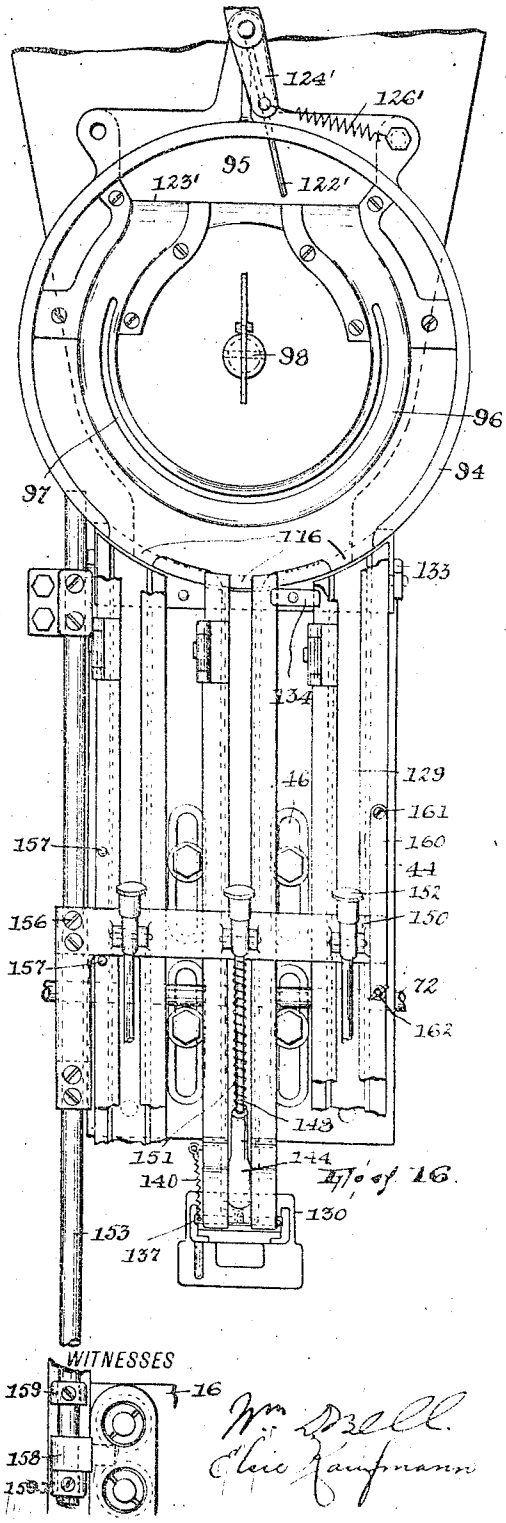
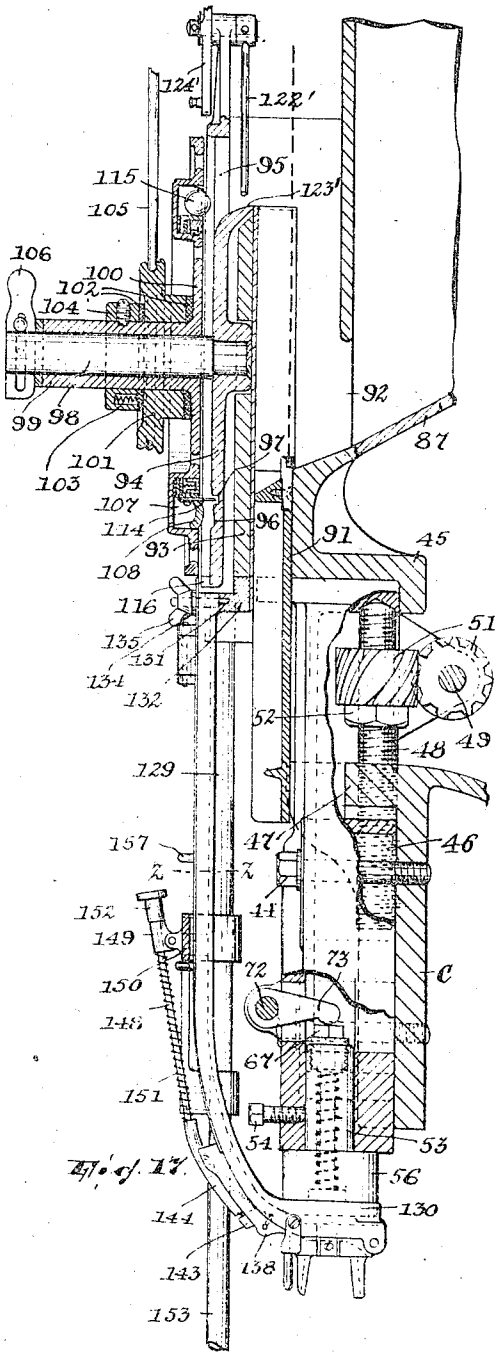
8 SHEETS—SHEET 7.





WITNESSES

159
16
158
159

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BOTTLE CAPPING MACHINE.

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8 SHEETS—SHEET 8

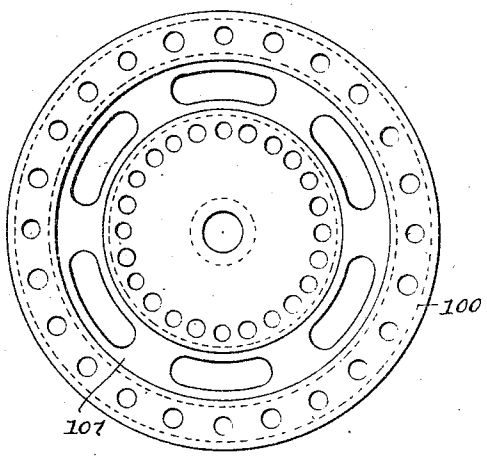

Fig. 21.

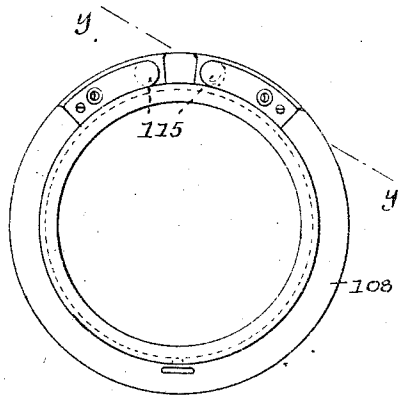

Fig. 22.

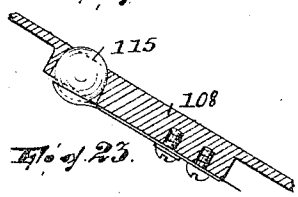

Fig. 23.

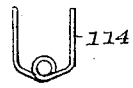

Fig. 26.

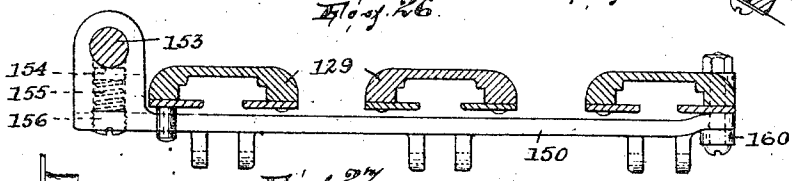

Fig. 27.

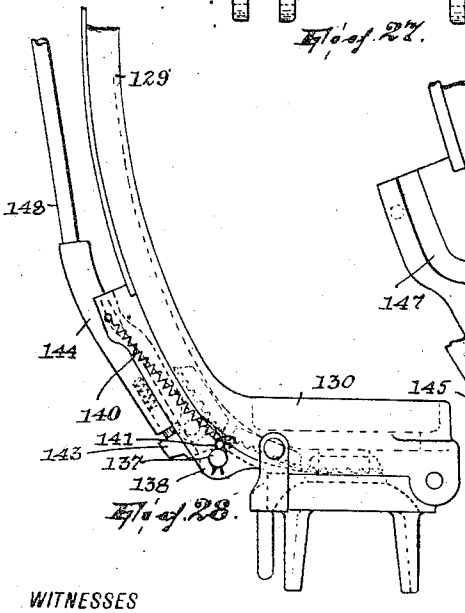

Fig. 28.

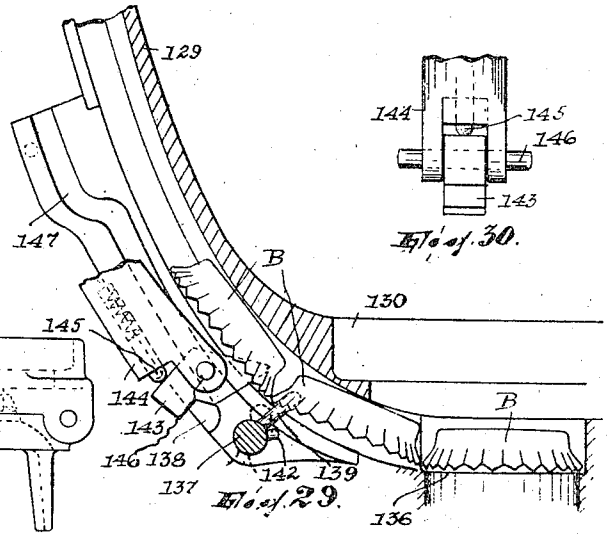

Fig. 29.

Fig. 30.

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UNITED STATES PATENT OFFICE.

BENJAMIN ADRIANCE AND AMOS CALLESON, OF BROOKLYN, NEW YORK; SAID CALLESON ASSIGNOR TO SAID ADRIANCE.

BOTTLE-CAPPING MACHINE.

1,043,286. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed April 9, 1909. Serial No. 488,963.

To all whom it may concern:

Be it known that we, BENJAMIN ADRIANCE and AMOS CALLESON, citizens of the United States, residing in Brooklyn, borough of Brooklyn, and State of New York, have invented certain new and useful Improvements in Bottle-Capping Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention consists in certain improvements in bottle-sealing machines of the class of that set forth in our U. S. Letters Patent No. 913,182, dated February 23rd, 1909, the improvements being directed to (1) the means for feeding the closures from the supply receptacle therefor to the proper position for sealing with respect to the bottle mouths; (2) the means whereby the flanged metallic shells of the closures are bent into interlocking relation with the bottle heads; (3) the means whereby the bottles and caps are brought into sealing relation to each other; and, (4) the means for advancing the bottles into proper position to come within the control of the last-named means.

The invention further consists in so constructing a machine of this nature that it may be readily and quickly adjusted to accommodate bottles of varying heights.

In the accompanying drawings, Figure 1 is a view of the improved machine in side elevation, partly in section; Fig. 2 is a plan view of the table of the machine with the head thereof and other parts removed and others shown in section; Fig. 3 illustrates a detail of Fig. 2, showing how certain vertically sliding blocks on the turret of the machine are depressed to their normal position; Fig. 4 is a view in rear elevation of a part of what is seen in Fig. 2, illustrating the means for rotating the turret; Fig. 5 is a view looking from right to left in Fig. 4 and showing the parts of the turret rotating means partly in side elevation and partly in section; Fig. 6 is a fragmentary view of the free end of the pawl x; Figs. 7 and 8 are side and plan views, respectively, of the block 1; Figs. 9 and 10 are horizontal sectional and plan views, respectively, of the guide 3 and the throw-out bar 4; Fig. 11 is a view in front elevation of the lower part of the machine and showing principally the means for elevating the bottles; Fig. 12 is a vertical sectional view, taken in a plane substantially central of Fig. 11; Fig. 13 illustrates one of the fiber blocks 28 shown in Fig. 12; Fig. 14 is a view partly in central vertical section and partly in elevation of one of the sealing-heads and the means for insuring the ejection of the sealed bottles from the sealing-heads; Fig. 14^a shows a modification of what appears in Fig. 14; Fig. 14^b is a horizontal sectional view through the parts 56, 57, 61, 66 and 68 in Fig. 14. Fig. 15 shows in front elevation, partly in section, the slip-friction-grip mechanism shown in Fig. 14; Fig. 16 is a view of so much of the machine as includes the sealing-heads, the supply receptacle for the closures and the means for delivering the closures to the sealing-heads in proper position for sealing, certain parts being broken away and others removed; Fig. 17 is a vertical sectional view taken in a plane substantially central of what is shown in Fig. 16, the view including the organism shown in Fig. 16, the head of the machine and the means for adjusting said organism vertically so as to accommodate varying heights of bottles; Fig. 18 is a view in side elevation of certain parts shown at the extreme left top portion of Fig. 1; Fig. 19 is a sectional view on the line x—x of Fig. 18 and looking toward the left in said figure; Fig. 20 is a detail view illustrating means for rocking a certain shaft shown in Figs. 1, 18 and 19; Fig. 21 and Fig 22 are back and front plan views, respectively, of the disk 100 and the ring 108 which, when assembled, constitute a certain rotating disk shown in Fig. 17; Fig. 23 is a sectional view on the line y—y of Fig. 22; Figs. 24 and 25 are enlarged fragmentary sectional views of the selecting mechanism, shown in Figs. 16 and 17; Fig. 26 shows a spring finger 114 of the selecting mechanism; Fig. 27 is a horizontal sectional view on the line z—z of Fig. 17 and looking downwardly; Fig. 28 is a side elevation of the lower portion of one of the cap chutes; Fig. 29 is a vertical sectional view of said cap chute and the means for insuring the advance of the closures in proper sequence to

a position where they will be successively alined with the bottles and sealing-heads; and, Fig. 30 is a fragmentary front elevation of certain parts in Fig. 29, to wit: the dog 143, slide 144, spring-actuated plug 145 and pivot 146.

On the frame or base *a* is a table *b* which is surmounted by a head *c*, the latter forming a bearing for a rotary turret *d* to which are suitably secured the radial carriers *e* on which slide vertically the blocks *f*, said blocks being recessed to receive and fit the bottle A. The bottles are placed on the table a number at a time and are advanced by the attendant to the turret in groups of three, *g* and *h* being guides for the bodies and necks, respectively, of the bottles. In the present instance there are six sets of blocks *f*, and every third block has an upwardly projecting pin *i*; at intervals corresponding with the pins *i*, the turret has teeth *j*.

To the back of the frame *a* is bolted a bracket *k* which is suitably slotted vertically and horizontally to form a guide for racks *l* and *m*. In this bracket is journaled a shaft *n* having a shoulder *o* and carrying a pinion *p* which is fixed thereto to rotate therewith. The shoulder *o* forms one bearing in bracket *k* for the shaft and a bushing *q* may form another bearing therefor. The pinion *p* meshes with rack *m*.

r is a pinion meshing with rack *l*, pinion *r* being free to rotate on the shaft but being interposed between friction disks *s* of fiber, one of which abuts against shoulder *o* and the other of which is impinged by a collar *t* which is splined to the shaft and is held under compression by a spring *u* interposed between collar *t* and a nut *v*.

It will be understood that the pinion *p* prevents endwise inward movement of the shaft by abutting against the inner portion of the bracket *k*, while pinion *r* prevents outward endwise movement of the shaft by abutting against the outer portion of the bracket.

The rack *m* carries a post *w* to which is pivoted a pawl *x* whose free end is suitably notched to engage the pins *i* on the turret-blocks *f*; a spring actuated pin *z* is carried by the pawl and bears against a shouldered block 1 fixed to the post and having a boss 2 which forms the actual bearing for the pawl. A grooved guide 3 is secured to the head *c* at the back and in it is arranged to move a throw-out bar 4 having oblique slots 5 receiving fixed pins 6 on the guide, the bar 4 being controlled by a hand-lever 7. When this hand-lever is operated in one direction the action of the pins 6 and slots 5 is to throw the bar 4 outwardly, in which position a roller 8 on the end of the pawl *x* will bear against the bar and prevent the pawl from actuating the turret; when the lever 7 is moved in the other direction the bar 4 moves inwardly so that the pawl is permitted to actuate the turret.

The blocks *f* are vertically movable so that they will follow the bottles as they rise to the sealing-heads; in order to insure their being depressed again before the pawl *x* is reached in their rotation, a deflector 9 is secured to the head in such position that they will impinge against its under or inclined side (Figs. 2 and 3).

The power transmitting mechanism shown in Fig. 5 is one which allows lost motion under certain abnormal conditions, to wit, in case a bottle should jam the turret against movement. Said mechanism is operated through the medium of a pitman 10 connecting the rack *l* with a pitman 11, to which reference will be again made. 12 is a vertical web forming part of the base *a* and 13 designates vertical strips which form with the web opposed guide-grooves 14 for the rear member 15 of a thrust block 16, the member 15 and front member 17 of the thrust block being connected by a pitman 18 with a wrist-pin 19 on a shaft 20 journaled in the back wall of the base *a* and in a bracket 21 depending from the web 12. The member 15 carries the three vertical sets of forwardly projecting stems 22 and each of these sets of stems is straddled by the forked stem 23 of a plunger 24 carrying an elastic bottle-pad 25 and vertically movable in a bearing 26 in the table. A friction strip 27 of fiber is interposed between each stem 23 and member 15, and against the front face of the stem bear the fiber blocks 28 under the pressure of springs 29 interposed between the blocks and adjusting nuts 30 on the stems. The upper part of member 17 forms a housing for the stems and springs, as shown. The foregoing constitutes an elevating mechanism for the bottles which, because of the slip friction grip maintained by the thrust block on the stems of the plungers, allows compensation for variations in the heights of bottles supposed to be of a given size. On the downward stroke of the thrust block, the stems 23 abut against a fixed bar 31, at which time the tops of the plungers will be level with the surface of the table *b*. In order to augment the release of the stems on the return movement as much as possible, the stems 23 are formed tapering in side elevation (see Fig. 12).

The power is taken into the machine through a pulley 32 having a clutch 33 and arranged on a shaft 34 journaled in the base *a*, the clutch being controlled by a lever 35 having a suitable operating handle 36. Through a pinion 37 on shaft 34 and gear and pinion 38 and 39 arranged on shaft 20, and a pinion 40 meshing with pinion 39 and fixed on a shaft 41 journaled in the frame and carrying a face plate 42, the pit-

man 11, which is pivotally connected with the face plate, is actuated, the same as in our Patent #913,182 above referred to; in consequence, through pitman 10 and the power-transmitting mechanism shown in Figs. 4 and 5, the turret is intermittently advanced. The thrust block 16 is controlled from the turret, its movements being so timed that it rises only when the three bottles to be elevated thereby have been properly positioned by the turret on the plungers 24, through a mechanism 43 which is primarily dependent for its actuation upon the teeth *j* on the turret; this mechanism is fully described in our patent above referred to.

Turning now to the superstructure carrying the sealing-head, the supply-hopper for the closures and the means for delivering the closures to the sealing-heads in correct position for sealing, to the front of the head *c* is attached, by means of bolts 44, a casting 45, the same having vertical slots 46 penetrated by the bolts and permitting its vertical movement. The casting overhangs a ledge 47 on the head *c*, and into this ledge is tapped a vertical screw 48 upon which the casting 45 directly rests. In the casting is journaled a horizontal shaft 49 carrying a crank 50, and this shaft and the screw 48 are geared together by means of screw-pinions 51, the one on the screw being screwed onto the same and having a lock-nut 52 so that it is fixed to rotate with the screw. Upon turning crank 50 the casting 45 (and the mechanism it carries) may be adjusted vertically, so as to accommodate the machine to different bottle heights. One of the sealing-heads is shown best in Fig. 14, there of course being as many of them as there are plungers 24.

53 is a hollow stem secured in the lower end of the casting by a set screw 54 and being internally threaded at its upper end and externally threaded at its lower end, a plug 55 being screwed in its upper end and a cylindrical socket 56 being screwed onto its lower end. The socket is internally shouldered and holds in place a shouldered ring 57 and a ring 58 having a flange 58′ overlying the ring 57. The ring 57 has radial recesses 59 and the ring 58 radial slits 60 coinciding with the recesses. In the slits and recesses are arranged jaws 61 which, in effect, are levers fulcrumed in the recesses, having their fulcrum portions 62 semi-circular in form to fit the recesses and each having one arm 63 projecting inwardly and another, 64, downwardly. The arms 64 abut against a shoulder 65 of ring 57, so that their expanding or outward movement is limited. The plug 55 forms a guide for a stem 66 carrying a nut 67 at its upper protruding end and a head 68 at its lower end, it being normally depressed by a cushioning spring 69 interposed between the plug and a collar 70 above the head, the collar and head forming an annular recess 71 receiving the arms 63 of the jaws and of such width as to allow some movement of the parts vertically without actuating the jaws. When a bottle with its superimposed cap impinges against the head 68, there is at first some free upward movement without actuation of the jaws; finally the jaws are engaged by the head 68, and, being turned on their fulcrums, assume a contracted relation and effect the interlocking of the flange of the cap with the shoulder on the bottle, substantially in the manner described in our Patent #913,182 above referred to. (A sealing-head containing these jaws is claimed in an application for U. S. Letters Patent filed by us February 20th, 1909). In Fig. 14ª head 68′ has a socket 68^2 in which is stepped the lower end 68^3 of stem 66′ having a shoulder 67′ coöperating with plug 55 to guide the stem; the head, thus universally movable, will adjust itself to whatever plane the top of the bottle may cause the cap to assume.

A rock-shaft 72 is journaled in the front of the casting 45 and carries fingers 73 each projecting into the casting over a stem 66, the parts 72 and 73 being limited in their downward movement by the nuts 67 when they abut against the plugs 55 and being limited in their upward movement by a stop 74 against which an arm 75 on shaft 72 abuts. A crank 76 is carried by the shaft and to the end of this crank is pivoted a block 77 penetrated by a vertical rod 78, a friction grip being maintained between the parts by fiber plugs 79 arranged in the block and held against the rod by springs 80 interposed between the plugs 79 and adjusting plugs 81 screwed into the block. The plugs 81 are adjusted with a view to secure a grip of the block on the rod sufficient to cause any bottle or bottles adhering in the sealing-head to be cleared therefrom upon a pull being exerted downwardly on the rod, while allowing a slip of the block under certain conditions (to be explained). The rod is pivotally connected to one arm of a forked lever 82, fulcrumed in the web 12. The arms 83 and 84 of the forked portion of this lever are adapted to be engaged by the hump 85 on a cam 86 on shaft 20, the actuation of the former effecting the pull referred to above.

It will be understood that the superstructure is adjustable vertically for the purpose of accommodating the machine to different heights of bottles. Such adjustment is usually effected when the machine is not running, at which time the plungers 24 are depressed and the hump 85 of the cam stands between the arms 83, 84 of lever 82, so that both arms are opposite low parts of

the cam. The slip friction grip medium afforded in parts 77 and 78 is designed to permit the mechanism for actuating the knock-out device (parts 72, 73 and 76) to adjust itself upon adjusting the superstructure vertically. When adjustment is effected upwardly, the knock out device and parts 77 and 78 rise with it, the knock-out device being supported by the stops formed by nuts 67; the rise of these parts continues until the lever arm 83 engages the cam, when the rod 78 will no longer partake of the rise but will slip in block 77. If the machine were now started with bottles in position to be sealed, the bottles would have to overcome the friction between parts 77 and 78; hence the machine is "turned over" one or more revolutions before beginning again to seal bottles, so that the hump on the cam draws the rod down in the block a distance sufficient to afford the necessary clearance between lever arm 83 and the low part of the cam. When the adjustment is effected downwardly, the action is in substance the reverse: The knock-out device and parts 77 and 78 descend by gravity with the casting until the lever arm 84 engages the cam, whereupon they will cease to move, the knock-out device merely rising (relatively) on shaft 72 as a fulcrum until stop 74 is engaged thereby, whereupon any further movement of the casting will be accompanied by a slip of part 77 on 78. If the machine were now started with bottles in position for sealing, the knock-out device could not be operated on the first cycle of movement; hence, the machine is "turned over" the same as before, once or twice, so that the hump on the cam will have opportunity to cause the rod to rise in the block a distance sufficient to afford the necessary clearance between lever-arm 84 and the low part of the cam and bring lever-arm 83 within the operative control of the hump.

The casting 45, the hopper 87, the rocking shaft 88, the means 89 whereby power is transmitted to the shaft from pitman 11, the pulley 90 on said shaft, the elevator 91 moving vertically in front of the discharge opening 92 from the hopper, and the box 93 in which the elevator moves are or may be substantially the same as the corresponding parts in our Patent #913,182 above referred to.

The plate 94 is also substantially the same as the corresponding part in our said patent except that it is provided with no rectifying means, the rejected caps being simply returned in the present instance through the same opening 95 (through which they are primarily discharged from the elevator) to the space in which the elevator moves. The checking groove 96 in plate 94 is likewise the same as before except that it has a countersunk groove 97. The rotating disk which coöperates with plate 94 in the agitation and selecting of the caps is arranged and operated as follows: A stub-shaft 98 is fixed in plate 94 and on it is journaled the hub 99 of said disk 100. A pulley 101 is arranged on the hub between friction disks 102, the outer one of which is pressed inwardly by spiral springs 103 in a collar 104 fixed to the hub. An endless belt 105 extends around the pulleys 90 and 101. The disk 100 is removably held on the shaft by a suitable clip 106. The disk 100 has a circular groove 107 opening rearwardly and in this groove is fitted a ring 108 having its back face coinciding with the groove 96 and convex (see Figs. 24 and 25). The ring has an internal shoulder 109 which a retaining ring 110, held in place by screws 111, overlies, the shoulder 109 being disposed between friction rings 112, the rear one of which is pressed upon by springs 113 housed in ring 110. Should the caps B jam between the plate 94 and the disk 100, the ring 108 will slip rotatively and so prevent the caps being injured. The ring 108 carries a spring finger 114 (Fig. 26) projecting into groove 97 and acting to keep the caps checked by the groove 96 and ring 108 in motion. (This finger also serves to limit the throw of the disk 100 under the abnormal condition attending adjustment of the superstructure vertically, at which time the shaft 88 must of course rotate.) To assist in keeping the caps in movement we arrange in the upper part of the ring 108 spring pressed balls 115 corresponding to similar parts in our Patent #913,182.

In view of the foregoing it will be understood that as the caps are discharged through opening 95 and fall between the parts 94 and 100, if their open sides are forward they will clear the groove 96 and fall down through the discharge openings 116; if their open sides face rearwardly they will be checked by said groove and carried up by the disk to be discharged back through the opening 95 into the space in which the elevator moves.

The pulley 90 is integral with a sleeve 117 fixed on shaft 88 and having an integral cam 118. On a pin 119 projecting from the cam are pivoted the semi-circular members of a clamp 120 which are drawn together by a spring 121 interposed between one of them and the nut of a bolt 122 which penetrates them. This clamp embraces a fiber band 123 on the hub 124 of a pulley 125 to which the upper end of the chain 126 for the elevator is attached. The pulley 125 has a lug 127 adapted to engage a fixed lug 128. This arrangement allows a slip as between the pulley 125 and the shaft 88 should the former be rotatively moved to an abnormal extent, as when the superstructure is adjusted, so that the elevator has a constant

range of movement corresponding to the rotary throw allowed to the pulley 125 by the lugs 127 and 128. In opening 95 oscillates a finger 122′, which dislodges the caps from the ledge 123′, carrying a crank 124′ having a roller 125′ held against cam 118 by a spring 126′.

The caps discharged by the selecting mechanism above described enter the cap chutes 129. Each of these has its lower end turned rearwardly and formed as a throat 130 which slips over the ring 57 of a sealing-head, the upper end of each chute being pinned (at 131) to a cross-piece 132 secured to the casting 45 and removably held in place by the latches 133 and buttons 134, the latter having thumb-screws 135. The throat 130 of each chute is formed with a seat 136 to support a cap in alinement with the mouth of the sealing-head. In order to prevent the weight of the caps back of the one in position for the sealing operation from interfering with the withdrawal of a bottle after it has been sealed, a small rock-shaft 137 is journaled in the blocks 138 attached to the lower end of each chute, the same carrying a toe 139 which projects into the chute into the path of the caps; by means of a spring 140 connecting one of the blocks 138 with a cotter pin 141 on shaft 137, a crank 142 is held against one block 138 so that the toe may yield to the caps when they are positively advanced by a dog 143 which is pivoted in a slide 144 and has its acting end normally pressed inwardly by a spring actuated plug 145 in the slide. The pivot 146 for the dog projects at its ends into opposed cam slots 147 in the blocks 138, so that as the slide moves vertically the cam slots alternately withdraw the dogs from the chutes and cause them to project into the same, the latter movement occurring as the slide descends so that the dogs positively advance the two lowermost caps a distance equaling the width of one cap, forcing the first into position on the seat 136 and leaving the second held by the toe 139. Each slide has a stem 148 arranged in a sleeve 149 pivoted to an arm 150, a spiral spring 151 being coiled between each sleeve and slide and holding the stem at the limit of movement allowed by its head 152. The arm 150 embraces a rod 153, friction blocks 154 being held against the rod by springs 155 held adjustably under tension by the plugs 156. The vertical movement of the arm 150 is limited by stop pins 157. The lower end of the rod penetrates a projection 158 on the thrust block 16, the rod carrying spaced collars 159 which the projection 158 alternately engages as the thrust block rises and falls. It will be understood that the stop-pins 157 are designed to preserve in the arm 150 a definite throw, although the superstructure may be adjusted, and when such adjustment occurs the contact of the arm with one of said pins produces a slip of the arm on the rod. 160 is a strip pivoted at 161 and having its lower end removably held in place by a thumb-screw 162 which acts to keep the free end of the arm against the faces of the chutes; when this strip is made to clear the arm, the arm may be swung on the rod as a pivot to withdraw the slides from the chute, the stems 148 being first drawn upwardly so that the pins 146 clear the cam slots 147.

The operation of the machine will be understood from the foregoing when taken in connection with our patent referred to. In view of the slip friction grip means provided where necessary in the power transmitting means for the several moving parts in the superstructure, the latter may be readily adjusted by operating crank 50, and as soon as the machine has been "turned over" once or twice the various mechanisms will have reset themselves automatically to suit the new conditions.

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

1. The combination of a sustaining means having means to support the container, a support adjustable therein, and mechanism operative on the container and including an actuated part having a continuing back and forth limited movement in the support, and a slip-friction-grip actuating means operatively connected with said part, the movement of said part being limited independently of the actuating means, substantially as described.

2. The combination of a sustaining means having means to support the container, a slip-friction-grip actuating means, a support adjustable in the sustaining means relatively to the prime mover of the actuating means, and mechanism operative on the container and including an actuated part having a continuing back and forth limited movement in the support, said actuating means being operatively connected with said actuated part, and the movement of said part being limited independently of the actuating means, substantially as described.

3. The combination of a sustaining means having means to support the container, a support adjustable therein, and mechanism operative on the container and including an actuated part having a continuing back and forth movement in the support limited in both directions by the support, and a slip-friction-grip actuating means operatively connected with said part, the movement of said part being limited independently of the actuating means, substantially as described.

4. The combination of the frame having means to support the container, an adjustable support, and mechanism operative on

the container and including an actuated part having a continuing back and forth movement in the support, means for limiting the movement of said part in the support, and a slip-friction-grip actuating means operatively connected with said part, substantially as described.

5. The combination of the frame having means to support the container, an adjustable support, and mechanism operative on the container and including an oscillatory part arranged in the support, means for limiting the movement of said part, and a slip-friction-grip actuating means operatively connected with said part, substantially as described.

6. The combination of the frame having means to support the container, an adjustable support, and mechanism operative on the container and including an oscillatory part arranged in the support, means for limiting the movement of said part in both directions, and a slip-friction-grip actuating means operatively connected with said part, substantially as described.

7. The combination of a sustaining means having means to support the container, a support adjustable therein, and mechanism operative on the container and including an actuated part journaled in the support and having a continuing back and forth limited movement therein, and a slip-friction-grip actuating means operatively connected with said part, the movement of said part being limited independently of the actuating means, substantially as described.

8. The combination of a sustaining means having means to support the container, a support adjustable therein, and mechanism operative on the container and including an actuated part journaled and having a continuing back and forth movement in the support and having its movement therein in both directions limited and a slip-friction-grip actuating means operatively connected with said part, the movement of said part being limited independently of the actuating means, substantially as described.

9. The combination of a frame, a container supporting means, a closure applying means, a knock-out mechanism for the second-named means movable therein, an actuating means, one of the second and third-named means being adjustable relatively to the other, and a slip-friction-grip power-transmitting mechanism operatively connecting the actuating means and the knock-out mechanism, substantially as described.

10. The combination of a frame, a container supporting means, a closure applying means adjustable to and from the supporting means, means for effecting a relative movement between the first and second-named means, whereby to bring the container within the control of the second-named means, a knock-out mechanism for the second-named means movable therein and therewith, and a slip-friction-grip actuating means for the knock-out mechanism, substantially as described.

11. The combination of the frame, a container-supporting means, a structure adjustable to and from the supporting means and comprising a closure applying means, means for effecting a relative movement between said structure and the supporting means, whereby to bring the container within the control of the closure-applying means, a knock-out mechanism for the closure-applying means an actuating member for said knock-out mechanism movable in and with said structure and having its movement therein limited thereby, and a slip-friction-grip actuating means for said actuating-member, substantially as described.

12. The combination of the frame, a container-supporting means, a structure adjustable to and from the supporting means and comprising a closure applying means, means for effecting a relative movement between said structure and the supporting means, whereby to bring the container within the control of the closure-applying means, a knock-out mechanism for the closure-applying means an actuating member for said knock-out mechanism movable in and with said structure and having its movement therein limited in both directions thereby, and a slip-friction-grip actuating means for said actuating member, substantially as described.

13. The combination of the frame having means to support the container, a moving part operative to effect the advance of the containers to said means, a moving actuating part reciprocatory in a plane disposed at an angle to the plane of movement of the first part, and a slip-friction-grip power-transmitting means operatively connecting said parts, substantially as described.

14. The combination of the frame having means to support the container, a moving part operative to effect the advance of the containers to said means, a moving actuating part reciprocatory in a plane disposed at an angle to the plane of movement of the first part, and a rotary slip-friction-grip power-transmitting means operatively connecting said parts, substantially as described.

15. The combination of the frame, means adapted to operate upon the containers, a table, a moving part operative to effect the advance of the containers to the first means and movable in a plane parallel with the top surface of the table, another part also movable in a plane parallel with the top surface of said table and engageable with said moving part to advance the same, and a slip-friction-grip actuating means comprising another part movable transversely

of the plane of the top surface of the table, substantially as described.

16. In a mechanism for delivering articles having limited thickness with their corresponding faces similarly disposed, the combination of two coöperative members one of which is movable relatively to the other parallel therewith, said members having coöperative checking portions one of which is movable in the member having it. substantially as described.

17. In a mechanism for delivering articles having limited thickness with their corresponding faces similarly disposed, the combination of two coöperative members one of which is movable relatively to the other parallel therewith, said members having cooperative checking portions one of which is yielding in the member having it, substantially as described.

18. In a mechanism for delivering articles having limited thickness with their corresponding faces similarly disposed, the combination of two coöperative members one of which is revoluble, said members having cooperative checking portions one of which is yielding in the member having it around the axis thereof, substantially as described.

19. In a mechanism for delivering articles having limited thickness with their corresponding faces similarly disposed, the combination of two coöperative members one of which is movable relatively to the other parallel therewith, said members having cooperative checking portions and the checking portion of the movable member being movable therein, and a yielding finger carried by the checking portion of the movable member and projecting toward the other member, substantially as described.

20. In a sealing-head for bottle-closing machines, the combination of a suitable support, jaws arranged radially in the support and pivotally movable in substantially vertical planes, said jaws having inwardly projecting arms, and a vertically movable part having an annular recess receiving said arms and permitting movement of said part independently of said jaws, substantially as described.

21. In a machine for affixing the closure part to the body part of a container, the combination of an affixing means, and means for effecting the movement of one of said parts into contact with the other, comprising a slip-friction grip-member normally operative during the working thrust to oppose the longitudinal movement of the container relatively to said member and having the face thereof affording the friction contact oblique relatively to the line of thrust, substantially as described.

22. In a machine for establishing the body and closure parts of a container in closed relation, the combination of a container supporting member, and a slip-friction grip elevating member for the supporting member normally operative during the working thrust to oppose longitudinal movement of the supporting member relatively to said elevating member, one of said members having the face thereof affording the slip-friction contact with the other member oblique relatively to the line of thrust, substantially as described.

In testimony, that we claim the foregoing we have hereunto set our hands this 6th day of April, 1909.

BENJAMIN ADRIANCE.
AMOS CALLESON.

Witnesses:
JOHN W. STEWARD,
WM. C. HOHN.