A. CALLESON.

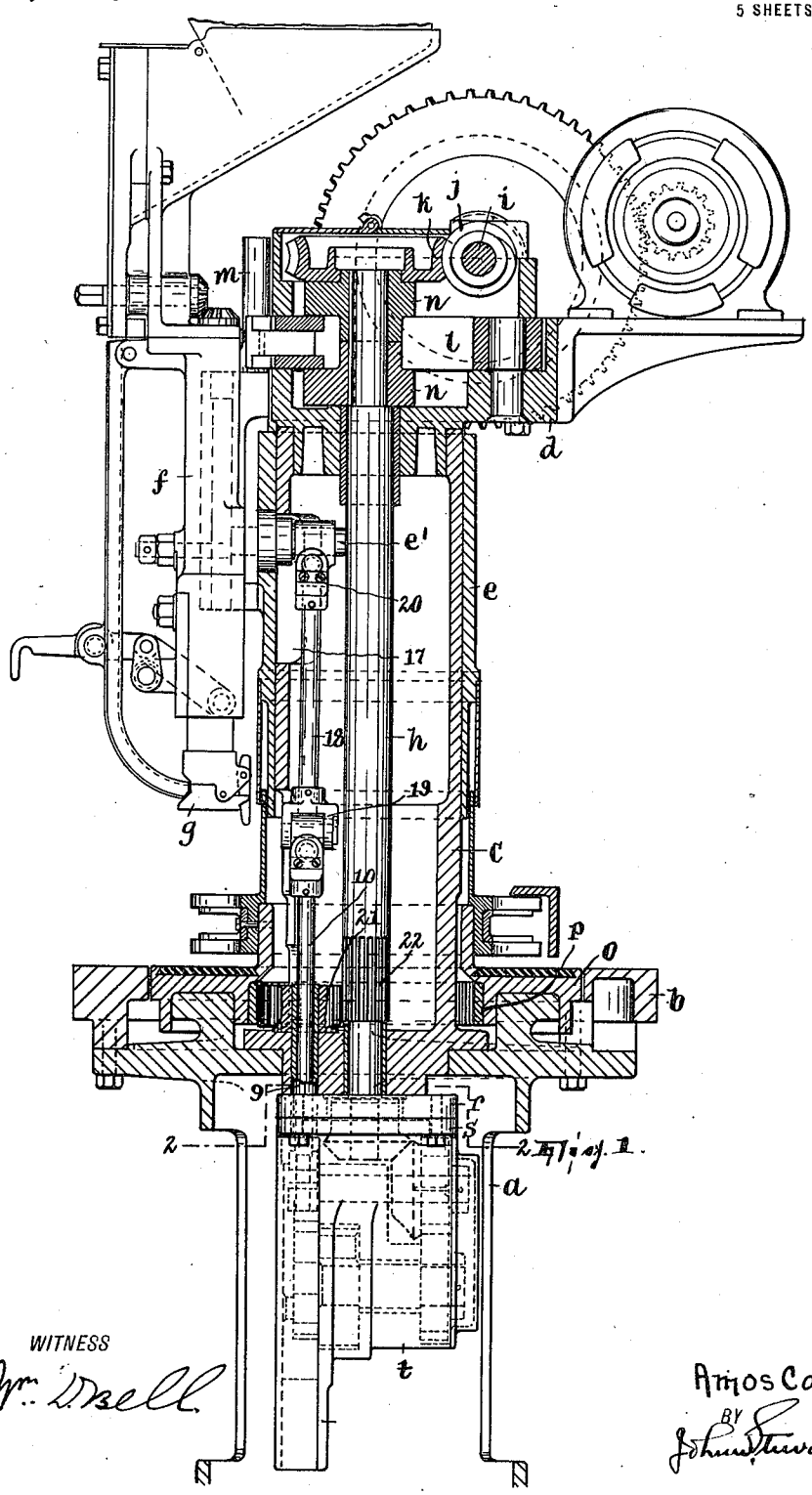
BOTTLE CAPPING MACHINE.

APPLICATION FILED MAY 22, 1917.

1,275,220.

Patented Aug. 13, 1918.

5 SHEETS—SHEET 1.



WITNESS

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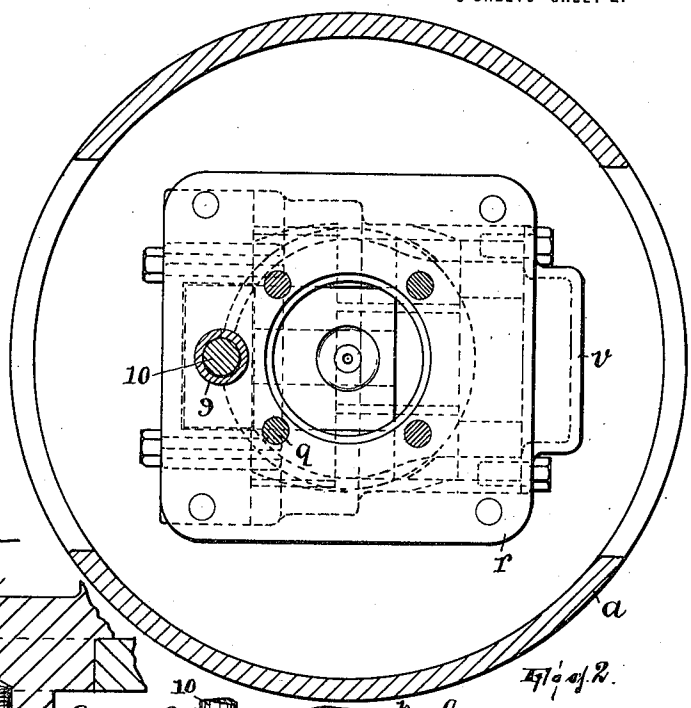

Fig. 2.

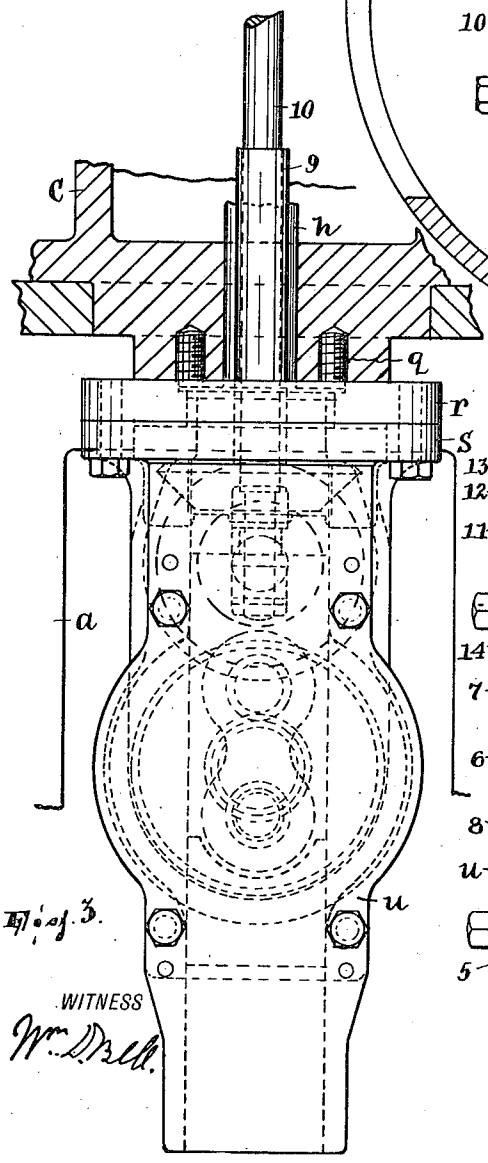

Fig. 3.

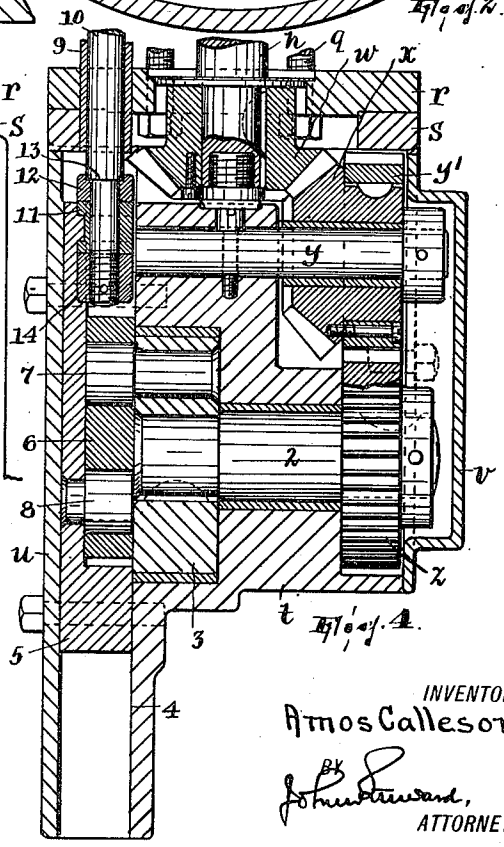

Fig. 4.

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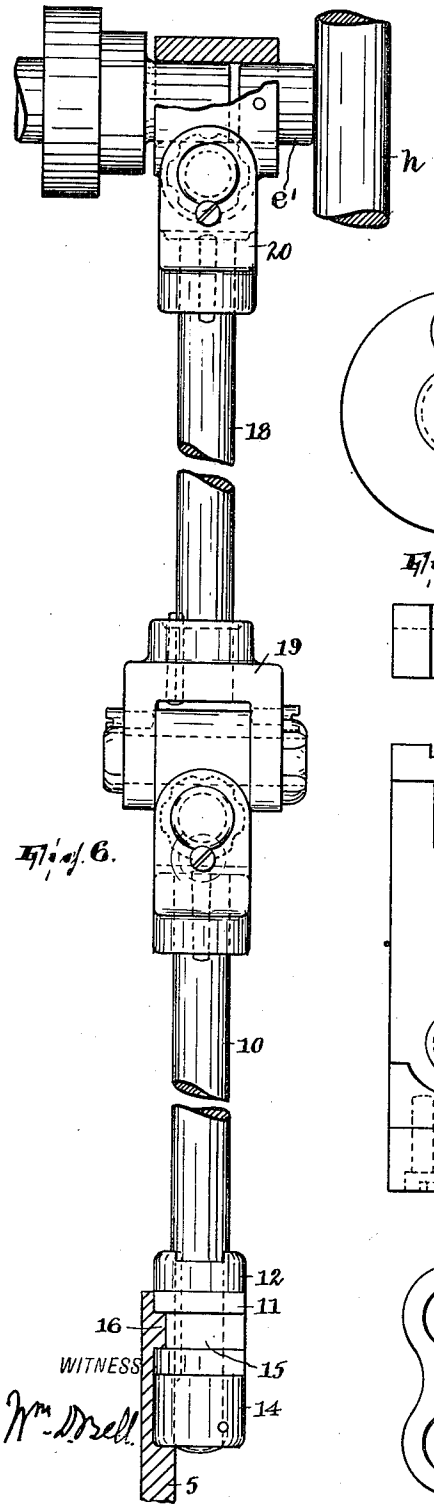

Fig. 6.

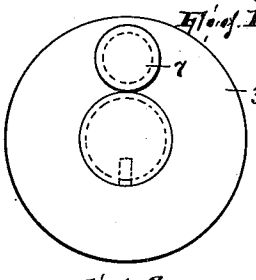

Fig. 8.

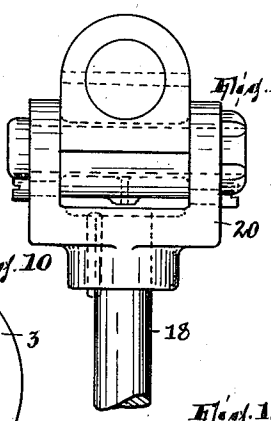

Fig. 10.

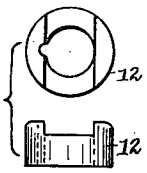

Fig. 11.

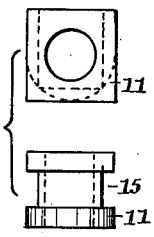

Fig. 12.

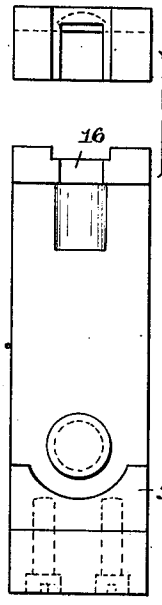

Fig. 7.

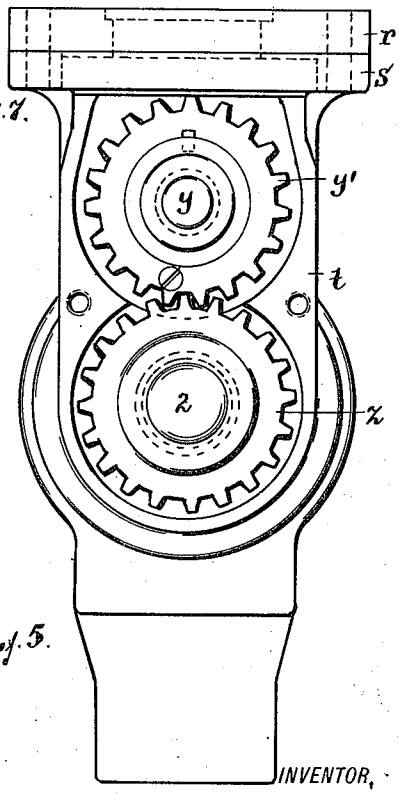

Fig. 5.

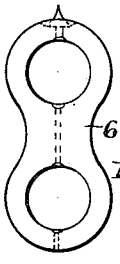

Fig. 9.

WITNESS

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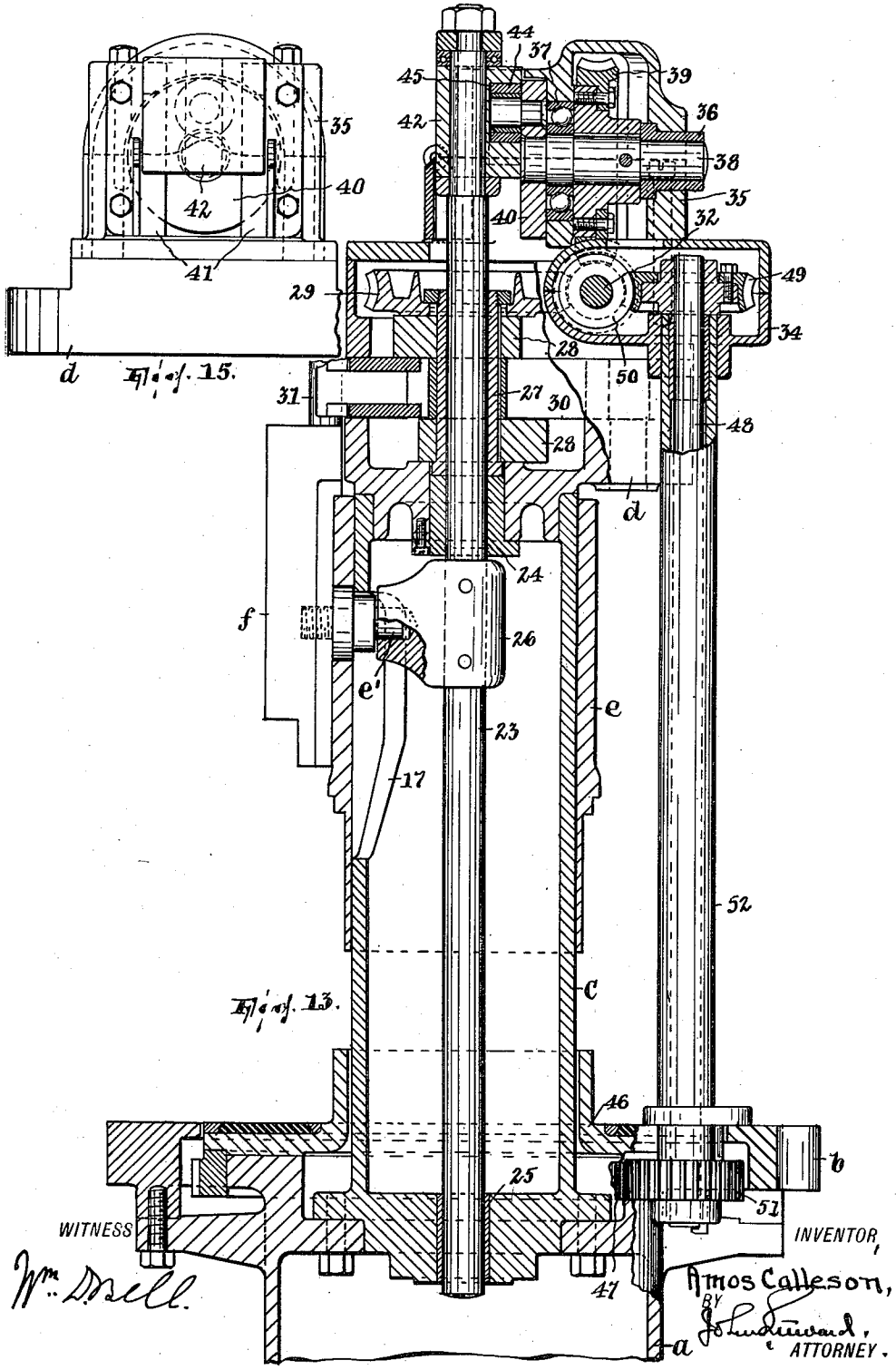

Fig. 15.

Fig. 13.

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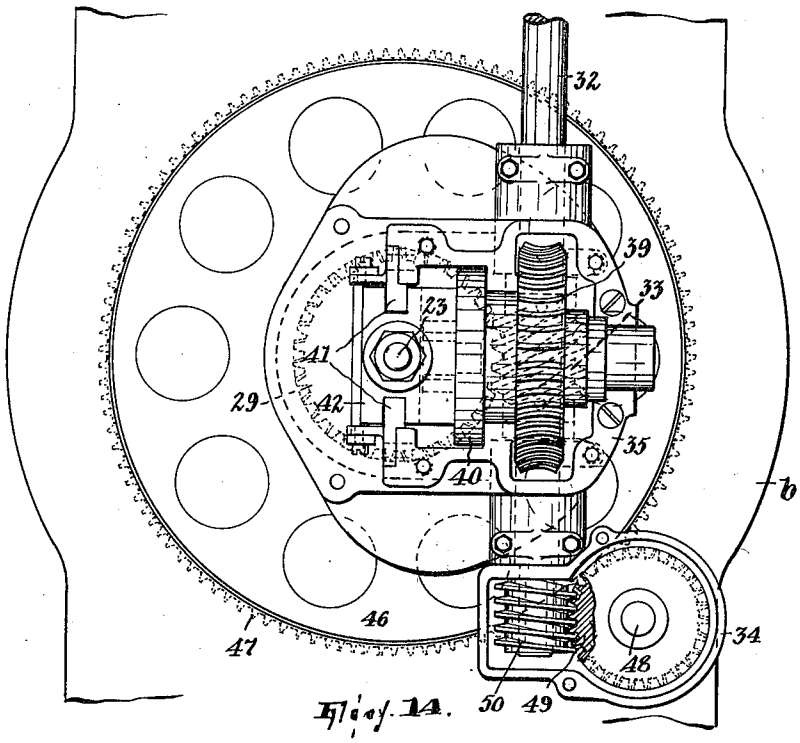

Fig. 14.

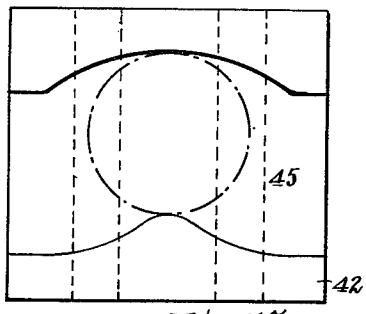

Fig. 17.

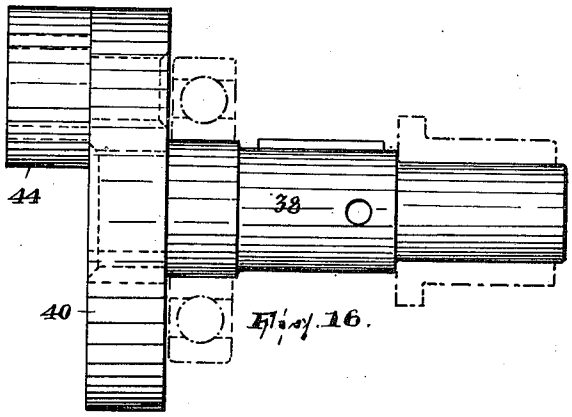

Fig. 16.

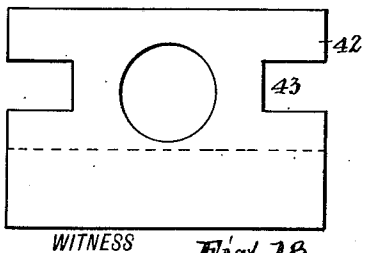

Fig. 18.

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UNITED STATES PATENT OFFICE.

AMOS CALLESON, OF BROOKLYN, NEW YORK, ASSIGNOR TO ADRIANCE MACHINE WORKS, INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

BOTTLE-CAPPING MACHINE.

1,275,220. Specification of Letters Patent. Patented Aug. 13, 1918.

Application filed May 22, 1917. Serial No. 170,167.

To all whom it may concern:

Be it known that I, AMOS CALLESON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

This invention relates to machines for sealing bottles and the like of the kind heretofore proposed by me and typified in U. S. Letters Patent No. 1,096,521 and No. 1,096,527, in which the sealing-head-carrying structure moves up and down to effect sealing and oscillates on a vertical axis so as to proceed with the container as the latter is laterally advanced; and the object of the invention is to improve the means for effecting the up and down and oscillatory movements of said structure, so as to obtain a smooth, easy motion thereof, eliminate wear and tear, increase the durability of the machine, especially with reference to the parts concerned in effecting said movements, render repairs easily effected, and increase the efficiency of the machine.

The invention is illustrated herein by two machines in which, though they differ in certain other respects, are alike in this: First that both have means, including an element rotating on a substantially horizontal axis, for simultaneously transmitting from the drive shaft to the sealing-head-carrying structure up and down and oscillatory movements, and, second, that both further have, included in said means, a vertical shaft extending through said structure.

In the accompanying drawings,

Figures 1 to 12 illustrate the machine first above designated,

Fig. 1 showing the machine mainly in front to rear section;

Fig. 2 a sectional view on the line 2—2, Fig. 1;

Fig. 3 a front elevation of certain mechanism contained in the base;

Fig. 4 a front to rear vertical sectional view of said mechanism;

Fig. 5 a rear elevation of said mechanism with its rear cover plate removed;

Fig. 6 a side elevation of the connecting means between said mechanism and the sealing-head-carrying structure;

Fig. 7 a rear elevation and a plan of a slide contained in said mechanism;

Fig. 8 a front elevation of a crank disk contained in said mechanism;

Fig. 9 an elevation of a link connecting the slide and crank disk;

Fig. 10 another side elevation of the means shown in Fig. 6, the same embracing only the upper end of said means; and

Figs. 11 and 12 certain details of said means.

Figs. 13 to 18 illustrate the second machine above designated;

Fig. 13 being a front to rear sectional view of the pertinent parts of said machine;

Fig. 14 a plan view, partly in section;

Fig. 15 a front elevation of the upper part of the machine shown in Fig. 13;

Fig. 16 a plan view of a crank disk and its shaft shown in Figs. 13 and 15; and

Figs. 17 and 18 a rear elevation and a plan, respectively, of a reciprocating member actuated by said crank disk.

Referring, first, to Figs. 1 to 12,

The base *a;* table *b;* pillar or pedestal *c;* head *d;* carrier *e* on which is bolted or otherwise secured the element *f* on which are suitably arranged the sealing head *g* and other parts, said carrier being movable up and down and oscillatory on the pillar *c* and forming, with element *f*, what is herein termed the "sealing-head-carrying structure;" the vertical rotary shaft *h* journaled at its lower end in said pillar and at its upper end in the head *d;* a horizontal drive shaft *i* journaled in the head; the intermeshing worm *j* and wormwheel *k* on shafts *i* and *h*, respectively; the lever *l* fulcrumed in the head and having a sliding engagement with the upstanding stud *m* on element *f;* the cams *n* on shaft *h* for oscillating said lever and hence the sealing-head-carrying structure; and the rotary bottle advancing turret *o* journaled on the base *a* concentric with the pillar and having an internal gear *p* are or may be all substantially the same as in my Patent No. 1,096,527.

To the lower end of the pillar, within the base *a* is secured by screens *q*, (Fig. 3) a plate *r* to which, in turn, is secured the top wall *s* of a casing *t* having removable front and rear walls or cover plates *u* and *v*. The shaft *h* projects through plate *r* into the

casing and carries within the casing a bevel pinion w. This pinion meshes with a bevel pinion x journaled on a stud y suitably fixed in the casing, and to pinion x is secured (so as to rotate therewith, a pinion y'. The last-named pinion meshing with the pinion z fixed on a short horizontal shaft 2 journaled in the casing and carrying a crank disk 3, pinion z and crank disk 3 being at the rear and front ends of the shaft and confining it against longitudinal movement.

The front of the casing is formed as a vertical guideway 4 for a slide 5 recessed at the back (Fig. 7) to receive a link 6 connecting the wrist-pin 7 on the crank disk with a stud 8 on the slide.

A tube 9 projects through the top wall s of the casing and plate r, protruding above the latter, and in this as a guide slides a stem or spindle 10 which is connected with the slide preferably as follows:

On the lower end of the stem is a block 11 clamped between a collar 12, abutting shoulder 13 on the stem, and a nut 14 screwed on the stem. The block has a groove 15 receiving a rib or tongue 16 (Figs. 12 and 7) on the slide. The stem being held against any lateral movement by its guiding tube 9, it will be apparent that once the tongue and groove connection between its block 11 and the slide is established and cover plate u keeps the slide up to its work, the vertical movement which the cam disk will impart to the slide through the disk will be transmitted to the stem, so that the slide and stem become practically one structure.

The sealing-head-carrying structure has a stud e' projecting inwardly through an opening 17 in the pillar c. 18 is a pitman having universal joint connections 19 and 20 with the upper end of stem 10 and stud e'.

The turret o is rotated much the same as in my Patent No. 1,096,527, to wit, through a pinion 21 which meshes on the one hand with gear teeth 22 formed on shaft h and on the other hand with the teeth p of said turret; but in the present instance I employ the protruding upper end of tube 9 as a journal for said pinion.

Shaft h being rotated from shaft i obviously rotates the crank disk through members w, x, y, z and 2, and so reciprocates vertically slide 5 and its stem 10 and consequently the sealing-head-carrying structure. Meanwhile, through cams n and lever l shaft h will cause the sealing-head-carrying-structure to oscillate on the pillar as an axis. Due to the pitman 18 and its universal joint connections with the stem and said structure, the desired movement of the sealing-head-carrying structure up, then laterally in one direction, then down, and then laterally in the other direction is obtained; simultaneously, of course, the turret will be rotated from shaft h through pinion 21.

Referring to Figs. 13 to 18:

Here the power is transmitted from the drive shaft for effecting oscillating and up and down movements of the sealing-head-carrying structure through coördinate means, thus: The base a, table b, pillar c, head d, and the sealing-head-carrying structure e—f, with its stud e' projecting through the opening 17 into the pillar c, remain the same as in the machine first described.

The structure e—f is in this case carried by a vertical shaft 23 arranged to slide vertically in bearings 24 and 25 in head d and the foot of pillar c, the shaft having affixed thereto a collar 26 which affords a stirrup receiving the stud e'. There is a sleeve 27 journaled on the shaft and supported by the head and having suitably fixed thereon the spaced cams 28 and the wormwheel 29, said cams being adapted when rotated to oscillate a lever 30 which has a sliding engagement with a vertical stud 31 on the structure e—f. When the element 27, 28 and 29 is rotated the lever 30 will be oscillated, causing oscillation of the structure e—f on the axis of the pillar in the same manner as the oscillation of the sealing-head-carrying structure e—f is effected in the machine first described.

The horizontal drive shaft 32, having a worm 33 with which wormwheel 29 meshes (Fig. 14), is journaled in head d in a boxing 34 the upper portion of which is removable and integral with a housing 35 planted on and bolted to the head d. In bearings 36 and 37 in this housing is journaled a horizontal shaft 38 carrying a wormwheel 39 meshing with the worm 33 and also carrying a crank disk 40 at its inner end. The housing 35 has opposite ribs 41 which form a vertical guideway for a block 42 (Figs. 14, 17 and 18) vertically grooved at the sides (at 43) to receive the ribs 41 and retained by the guideway face to face with the crank disk. The upper end of shaft 23 is reduced and suitably swiveled in block 42. The crank disk has an eccentric stud (here a roller) 44 engaged in a transverse groove 45 in the block 42.

Shaft 32 being rotated, and so through lever 30 oscillating the structure e—f—23, simultaneously causes, through 33, 39, 38, 40 and 42, vertical reciprocation of said structure (shaft 23 oscillating in block 42), so that the desired movement of said structure first up, then laterally in one direction, then down, and then laterally in the other direction, is obtained.

The bottle advancing turret 46, journaled on the base a concentric with pillar c, in this instance has exterior peripheral teeth 47. It is rotated from the shaft 32 through a shaft 48 exterior of the pillar and having a wormwheel 49 at its upper end meshing with a worm 50 on shaft 32 and a pinion

51 at its lower end meshing with the teeth 47 of the turret, said shaft being journaled in a vertical sleeve 52 connecting the table and boxing 34.

It will be seen that both of the constructions herein described are predicated upon one of the two means for exerting sealing pressure on the containers and their closures (viz, the means to support the containers and the sealing-head-carrying structure) being movable not only toward and from the other but transversely of its line of thrust movement, and that to this end the connection is such in either case (*i. e.*, flexible connection 10—18 in the construction first described and the connection between shaft 23 and block 42 in the other construction) as to permit this transverse movement; further, the transverse movement in each case being, as shown and described, an oscillatory one, the connection involves the use in the one case of universal joints 19—20 and in the other of a swivel.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being movable transversely of its line of thrust movement, and means, including an up-and-down-motion transmitting rotary member journaled on a substantially horizontal axis in said other means, for moving said member up and down.

2. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being movable transversely of its line of thrust movement, and means, including an up-and-down-motion transmitting rotary crank element journaled on a substantially horizontal axis, for moving said member up and down.

3. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being oscillatory on an axis extending longitudinally of its line of thrust movement, and means, including an up-and-down-motion transmitting rotary member journaled on a substantially horizontal axis and a vertical shaft affording the axis of oscillation of said thrust member, for moving said member up and down.

4. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being movable transversely of its line of thrust movement, and means, including an upright rotary shaft and an up-and-down-motion transmitting rotary member journaled on a substantially horizontal axis and operatively connecting said shaft and thrust member, for moving up and down said thrust member.

5. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being movable transversely of its line of thrust movement, an up-and-down reciprocating member, means to reciprocate said member, and a flexible power-transmitting connection between said reciprocating member and thrust member.

6. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being oscillatory on an axis extending longitudinally of its line of thrust movement, an up-and-down reciprocating member, means to reciprocate the latter member, and a universal-joint connection between said reciprocating member and the thrust member.

7. In a machine for assembling the body and closure parts of containers, coacting means for pressing said parts against each other, one of said means being a thrust member having thrust movement toward and from the other means and being movable transversely of its line of thrust movement, and means for moving said thrust member up and down including an actuating member rotative on a substantially horizontal axis and an actuated member operatively connected with and adapted to be moved up and down by the actuating member, said thrust member being connected with the actuated member to move up and down therewith and being movable relatively to and transversely of said actuated member.

In testimony whereof I affix my signature.

AMOS CALLESON.