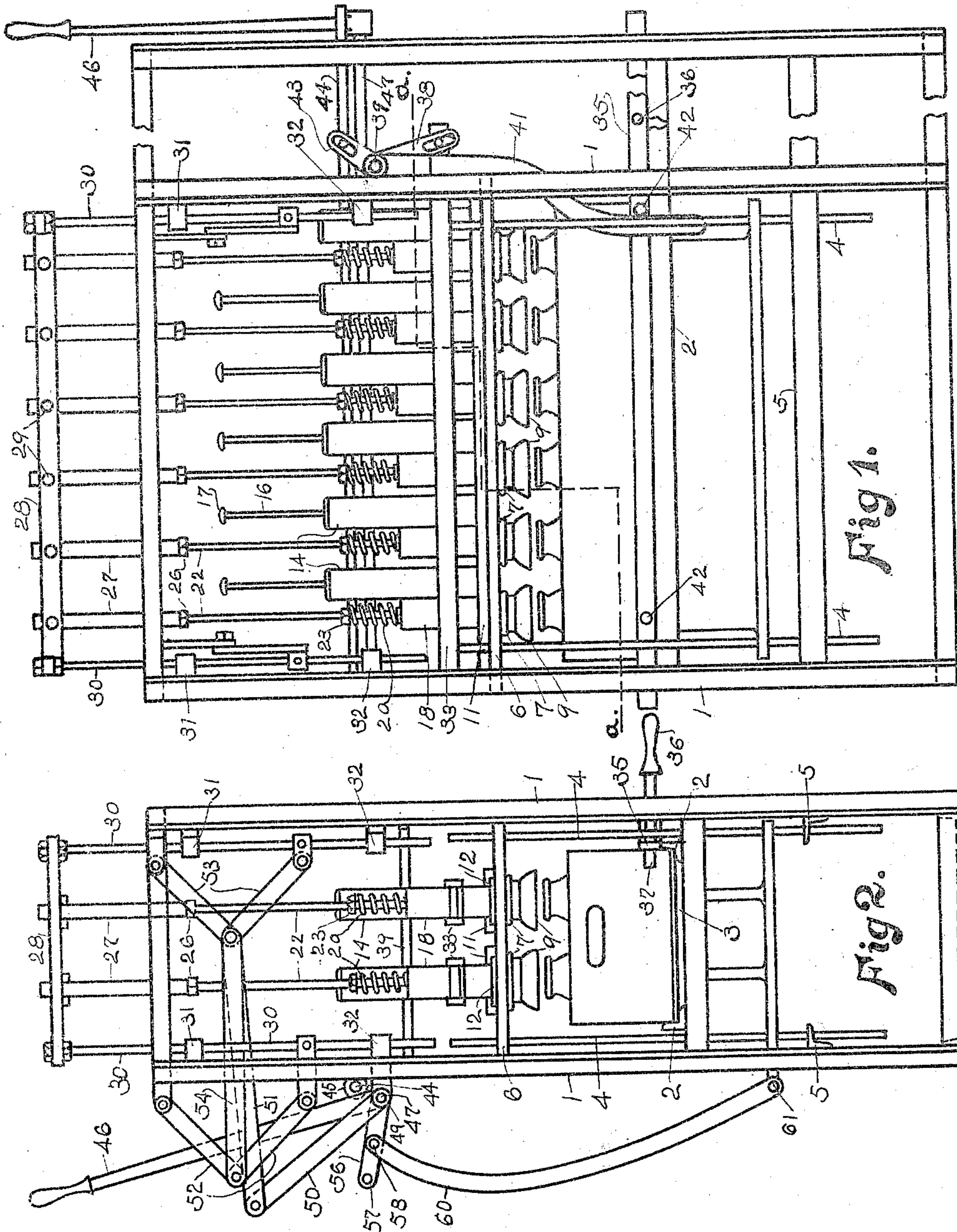


R. LITTLER.
BOTTLE CAPPING MACHINE.
APPLICATION FILED JAN. 5, 1909.

Patented Mar. 1, 1910.
3 SHEETS—SHEET 1.

951,015.



WITNESSES:

C. J. Larson.
E. W. Wilkinson.

INVENTOR.

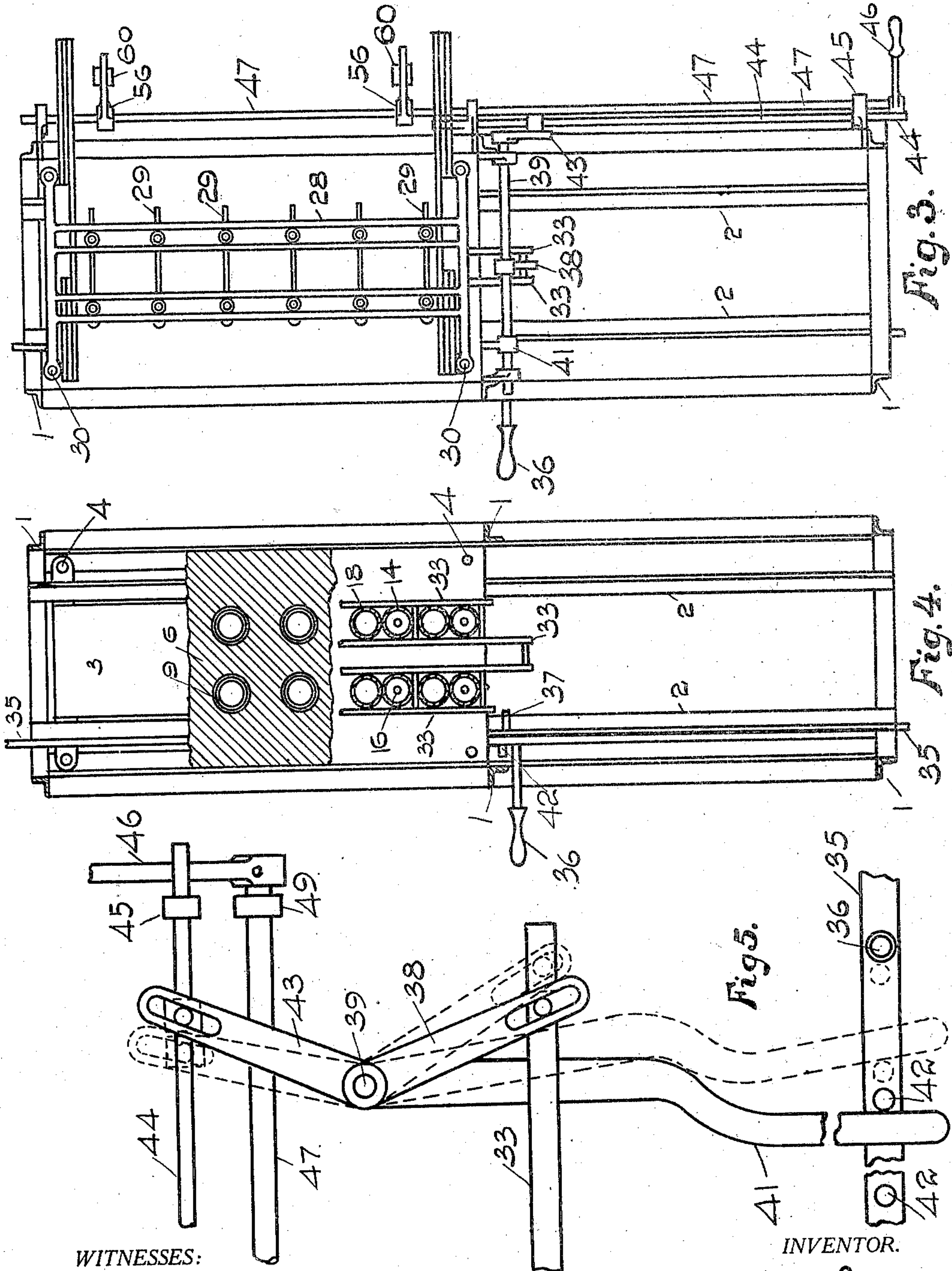
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WITNESSES:
C. J. K. Linsen
E. W. Dickinson

INVENTOR.
Robert Littler

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3 SHEETS—SHEET 3.

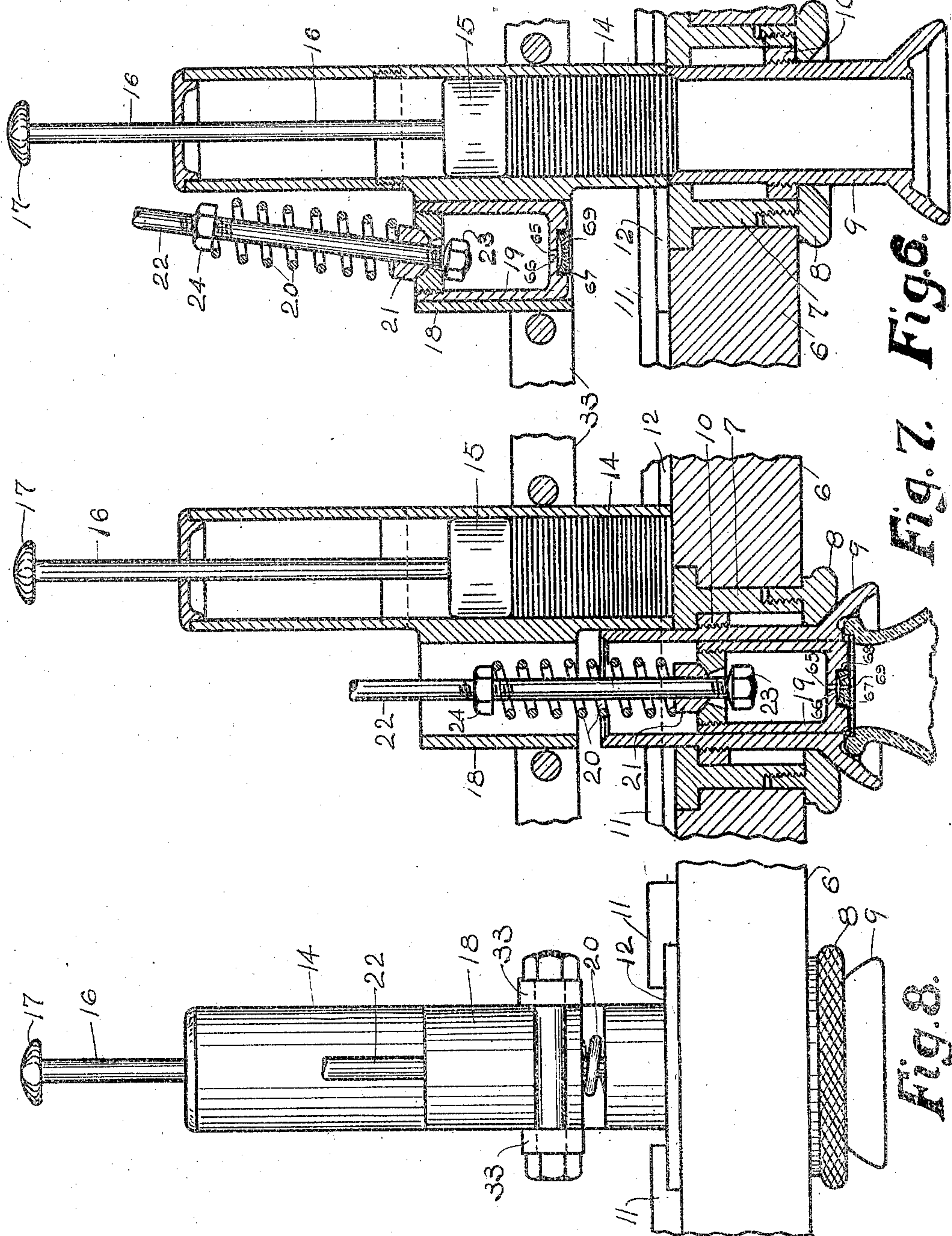


Fig. 6.

Fig. 7.

Fig. 8.

WITNESSES:

C. J. K. Hansen.

E. W. Wilkinson.

INVENTOR.

Robert Littler

UNITED STATES PATENT OFFICE.

ROBERT LITTLER, OF HADDONFIELD, NEW JERSEY.

BOTTLE-CAPPING MACHINE.

951,015.

Specification of Letters Patent.

Patented Mar. 1, 1910.

Application filed January 5, 1909. Serial No. 470,853.

To all whom it may concern:

Be it known that I, ROBERT LITTLER, a citizen of the United States, residing at Haddonfield, in the county of Camden and State of New Jersey, have invented a new and useful Bottle-Capping Machine, of which the following is a specification.

This invention relates to improvements in bottle capping machines and particularly to that variety in which thin flat paper disks—commonly called caps—are inserted into the openings or mouths of glass bottles or jars, such as are used as receptacles for milk, cream and the like. Its objects are, to provide a mechanism that will operate on a plurality of such bottles simultaneously and which will unfailingly perform its functions accurately and with despatch. Secondly, to provide a mechanism that shall be exceedingly simple in construction and easy of operation.

A further object is to so construct and arrange the several parts as to be easily dismounted and thoroughly cleansed within an unusually short period of time and, finally, to have the said capping mechanism arranged to work harmoniously in conjunction with suitable mechanism for previously filling such bottles, the same being contained in the usual form of cases.

These and other minor objects are attained by the novel combination and construction of parts hereinafter fully described and shown in the accompanying drawings, forming part of these specifications, and in which:

Figure 1, is a side elevation of the entire mechanism and indicating its operative combination with a filling mechanism. Fig. 2, is an end elevation of the same. Fig. 3, is a plan view of the mechanism. Fig. 4, is a section taken on line *a-a* of Fig. 1. Fig. 5 is a diagrammatic view, illustrating the lever action. Fig. 6 is an enlarged side view, partially in section, of the cap feeding means in position to deposit a cap. Fig. 7, is a similar view, but shown in position to press a cap into the bottle mouth, and Fig. 8, is a front view of Fig. 7.

Similar characters refer to similar parts throughout the several views.

The invention comprises a suitable framework consisting of the upright members 1, preferably of rolled angles, at the corners; midway in height is secured a trackway 2, which may be a continuation from the track-

way of the filling mechanism, said trackway being arranged at the front and rear of the machine and having between the track treads, a table 3, adapted to sustain a case containing the several bottles to be operated upon and which is capable of vertical movement together with its sliding rods 4, the same moving freely in their guides 5.

At a suitable height above the track-way, so as to clear the tops of the bottles, is a plate 6, permanently secured to the corner uprights 1, containing a series of apertures corresponding in number and location with the bottles below; each of these apertures is provided with sleeves 7, rigidly set therein and extending below the plate 6, having connected at their lower ends, knurled, screw threaded rings 8, which act as stops for the bell-mouthed adjusters 9, adapted to contact with the upper ends of the bottles, said adjusters having a limited range of vertical movement within the sleeves 7, which serve as guides therefor.

Upon the bell-mouthed adjusters 9, are secured annular rings 10, adapted to contact with the contracted portion of the sleeves 7, when the adjusters are at their highest point and also with the rings 8, when the adjusters are down, or in their normal position, at which time their upper ends are level with the upper surface of the plate 6; the lower ends of the adjusters are shaped to conform to the tops of the bottles, while the upper ends have a beveled recess to receive and retain a single cap.

Over each row of apertures in the plate 6, are grooved slide ways 11, having freely movable therein plates 12, and having secured on their upper surfaces cylindrical members 14, which act as reservoirs for the caps, the same being held under pressure of the weights 15, freely slidable therein and which are provided with rods 16, having stops 17, at their upper ends. Other cylindrical members 18, are integrally attached at the front of the reservoirs 14, in the plane of their travel, containing plungers 19, freely movable therein, having attached at their upper ends helical springs 20, resting on conical seats 21, serving as cushions to the plungers 19, while passing through are the rods 22, having convex faced nuts 23, at their lower ends, and compression nuts 24, for adjusting the tension of the springs 20, as may be desired; continuations of the rods 22, are screw threaded for the

lock nuts 26, and are also threaded into the tubes 27, the same being pivotally attached at their upper ends to the cross bars 28, by means of the removable pins 29, and are operated vertically by reason of their connection with the sliding bars 30, guided by the brackets 31 and 32.

Encompassing the cylindrical members 14 and 18, are open frames 33, the same being adapted to transmit horizontal motion thereto; these frames are actuated by means further described.

At the front of the machine is a bar 35, horizontally disposed and movable longitudinally by the handle 36; on its inner side are a series of pins 37, adapted to contact with and move forward the cases containing the bottles from the filling mechanism to their proper position under the capping mechanism; in addition the movement of the bar 35, serves to transmit reciprocating motion to the plates 12, and their attached cylindrical members 14 and 18, through the connecting frame 33, the same being operated by the lever 38, fulcrumed on a shaft 39, which is also provided with a depending lever 41, adapted to contact with the pins 42, and 42' set in the outer side of the bar 35; as the pins 42, and 42' are separated by a distance nearly equal to the length of a bottle case, it will be understood the lever 41, is actuated only at the limits of travel of the bar 35, and in amount sufficient only to advance the cylindrical members the proper distance, which is from the center of the plunger guide 18, to the center of the cap reservoir 14, so that either may be brought into register with the bottle mouths. Furthermore, on the shaft 39, is another lever 43, whose function it is to move a bar 44, located horizontally at the rear of the machine in suitable brackets 45, outwardly in the path of the main operating hand lever 46, so that unless the bar 35, is in its initial position, the lever 46, is effectually locked against operation, thus preventing accidental misuse of the same at such times as might cause damage, or abortive effort, with respect to the capping mechanism.

The hand lever 46, is attached to a shaft 47, journaled horizontally at the rear of the machine as at 49, and may be used to operate the bottle filling mechanism; on the shaft 47, is secured a lever 50, having attached at its end the links 51, which operate the toggle joints 52 and 53, connected by the bar 54, so arranged as to give a parallel motion in elevating or depressing the several bars 30, which, through their connections, press the caps into the bottles; also on the shaft 47, are secured levers 56, having pins 57 and 58, set at varying distances from the fulcrum point, so as to accommodate varying heights of bottles; on these pins are removably secured other le-

vers 60, attached at their opposite ends to the bars 61, which operate the table 3, vertically, thus raising or lowering the same and at the same time the case of bottles disposed thereon, while the caps are simultaneously pressed into the bottles, or seated, by the toggle action above described.

As may be noticed, the rod 22, is, through its connections, pivotally attached at its upper end, or in other words, hinged in such manner as to swing, to the crossbars 28, by the pins 29; now if the cap reservoirs 14, and attached cylindrical members 18, which act as guides for the pusher plungers 19, are moved horizontally in the direction needed to deposit a cap, the result is to cause the rod 22, to move at the lower end, and, as it cannot move in a similar manner at the upper end, it must necessarily assume an inclined position, as is indicated in Fig. 6. The rods 22, and tubes 27, are made detachable so as to be readily dismantled as a whole, while the rods are screw-threaded into the tubes for the purpose of obtaining any desirable adjustment as to length.

It will be understood that the levers 38, and 41, are rigidly secured on the shaft 39, in such manner that motion being imparted to one is likewise imparted to the other.

Fig. 5, illustrates the lever 41, at the extreme limit of travel in one direction by the full lines, and at the opposite limit of travel by the broken lines; that is to say that if the bar 35, be moved to the right sufficiently far to bring the pin 42 (at the extreme left hand) against the lever 41, and the movement continued until the said left hand pin 42, has assumed a position indicated by the left hand dotted circle, all of the levers will have assumed positions indicated by their corresponding broken lines and performed their work functions; the forward action being to move the cap reservoir into position to deposit a cap, and at the same time lock the machine, while a reverse action unlocks the machine and brings the pusher plungers into position to operate, while the excess motion of the bar 35, provides for positioning the bottles horizontally.

The cap seating plunger 19, may be used as a reservoir for a suitable ink which flows by gravity through the orifice 65, to a depression 66, formed in the top of the rubber stamp, or die 67, which may have on its face any desired inscription and which contacts with the caps in the act of pressing them into the bottles, thereby printing the inscription thereon. The said rubber stamp, or die, is made with an inverted conical projection, or top 68, the enlarged bevel being toward the end and is adapted to fit into a corresponding recess in the bottom of the plunger 19, thereby holding the stamp in position; it is further provided with minute openings 69, leading from the depression 66,

to the face, the same conveying the necessary small quantity of ink thereto.

In operation a case containing empty bottles may be placed upon the track-way at the front end of the machine and by action of the bar 35, be brought into register with the filling mechanism; a second forward movement of the bar will move the case—now filled—into position to be capped, and at the same time move the cap reservoirs into position to deposit a single cap into each of the bottle adjusters; a reverse action of the bar brings the cap plungers into alignment with the deposited caps and bottles immediately below and in register therewith, whereupon a single forward pull of the hand lever 46, serves to raise the table, case and contained bottles and at the same time press or seat the caps into the bottles.

From the foregoing it will be seen that but two distinct operative movements are required; that their actions are consecutive and certain in effect; that provision has been made for operating on several sizes of bottles and that the whole construction is well adapted to be used as an auxiliary to a filling machine; also that provision has been made to print each cap as it is seated with any preferred device, such as the date of filling, etc. without additional labor or expenditure of time.

As it is necessary to frequently dismount the mechanism, so that the component parts thereof may be sterilized and rendered antiseptic, particular attention is called to the rapidity and ease with which this may be done in the design as indicated.

Manifestly the mechanism shown may be modified considerably without departing from the general spirit of the invention as embodied herein; therefore I do not desire to be limited to the exact construction shown, but may deviate in details as will be evident to those skilled in the art. Moreover, it will also be noticed that by slightly changing the design, without altering the fundamental characteristics of the mechanism, that corks and other common forms of bottle stoppers or closures may be readily operated upon and inserted in bottles or jars with appropriately shaped mouths.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a bottle capping machine, the combination with a vertically movable table for the bottle case, cap feeding reservoirs, and cap depressing plungers; of means for mov-

ing the bottle case horizontally into position, means for feeding caps coincident with positioning of the bottle case, and means for operating the cap depressing plungers combined with means for elevating the bottles.

2. In a bottle capping mechanism, a vertically disposed reservoir, a cap feeding means therein, a cap seating plunger, a guide for said plunger combined with the cap reservoir, a tubular shell having a cap inlet and adapted to communicate with the bottles to be capped and means to transmit reciprocating motion to the cap reservoir and plunger guide so that either may register with said tubular shell.

3. In a bottle capping mechanism, a series of bottle adjusters, guide sleeves therefor, removable retaining rings on said sleeves, a plate supporting the guide sleeves having apertures therethrough, grooved slide-ways over said apertures, plates slidable therein, cap reservoirs on said plates at one end thereof, plunger guides attached thereto and means for bringing either of the latter elements into register with the bottle adjusters.

4. In a bottle capping mechanism, in combination with other mechanism, a bottle centering device comprising a cylindrical part secured to the supporting part, a centering bell mounted to move vertically therein, having an annular recess at the upper end normally level with the supporting part, adapted to receive and retain a single cap, means for feeding a single cap thereto, means for pushing caps through the centering device and into the bottles, and means combined therewith for elevating the bottles into the centering device.

5. In a bottle capping mechanism, the combination of a bottle case adjusting bar, means for manipulation thereof, a main operating lever, a rock shaft, a lever attached thereto operable by pins set in said bar near the extreme limits of its motion, a second lever fulcrumed on said shaft, connections therefrom to the capping mechanism whereby the same may be reciprocated, a third lever fulcrumed on said shaft, and a horizontal bar movable in the path of the main operating lever and acting as a stop thereto, when the first named bar is in operation.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT LITTLER.

Witnesses:

JOHN C. MCKELVY,
CHAS. H. WESTHOOK.