

No. 720,570.

PATENTED FEB. 17, 1903.

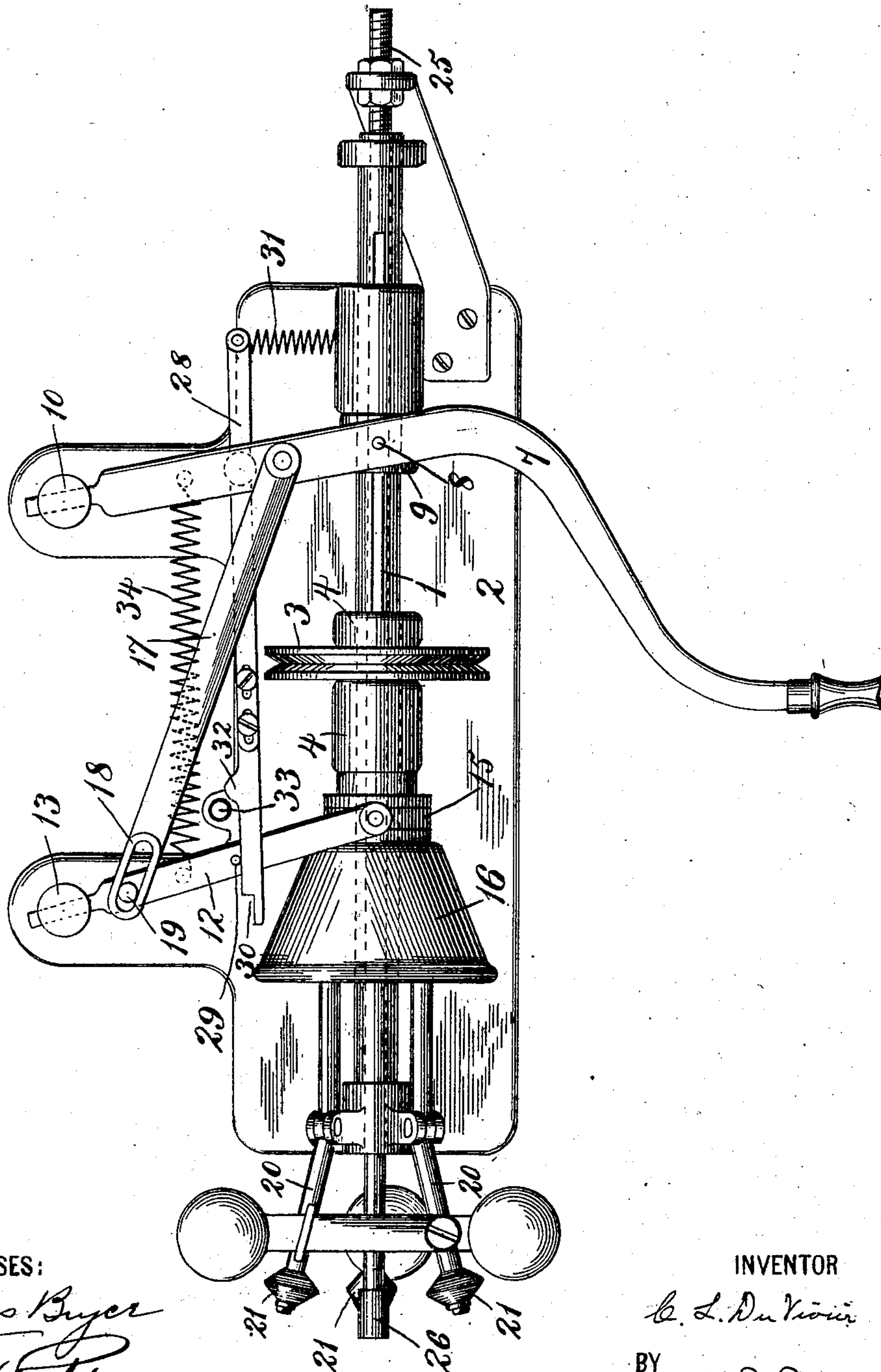
C. L. DU VIVIER.  
BOTTLE CAPPING MACHINE.

APPLICATION FILED SEPT. 23, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1,*



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2 SHEETS—SHEET 2.

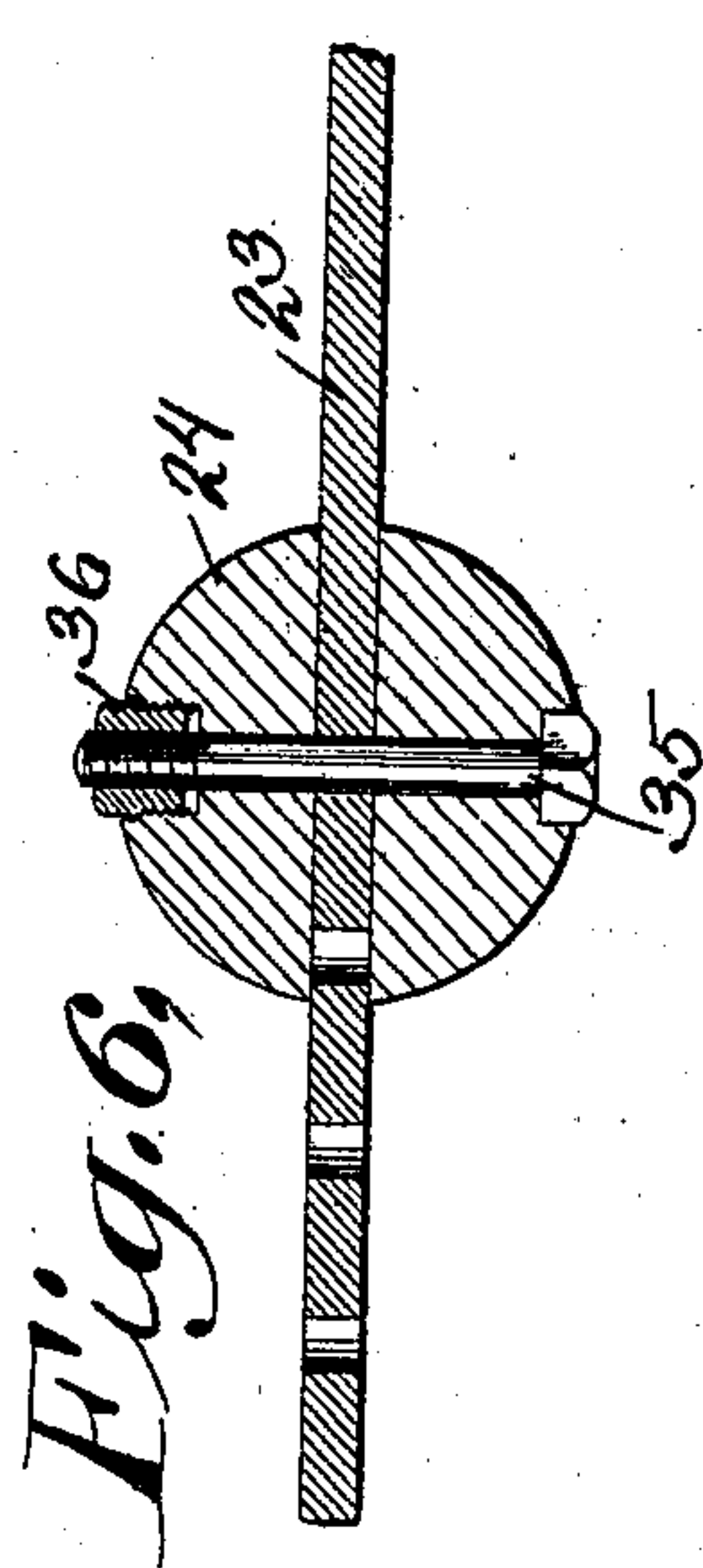


Fig. 2,

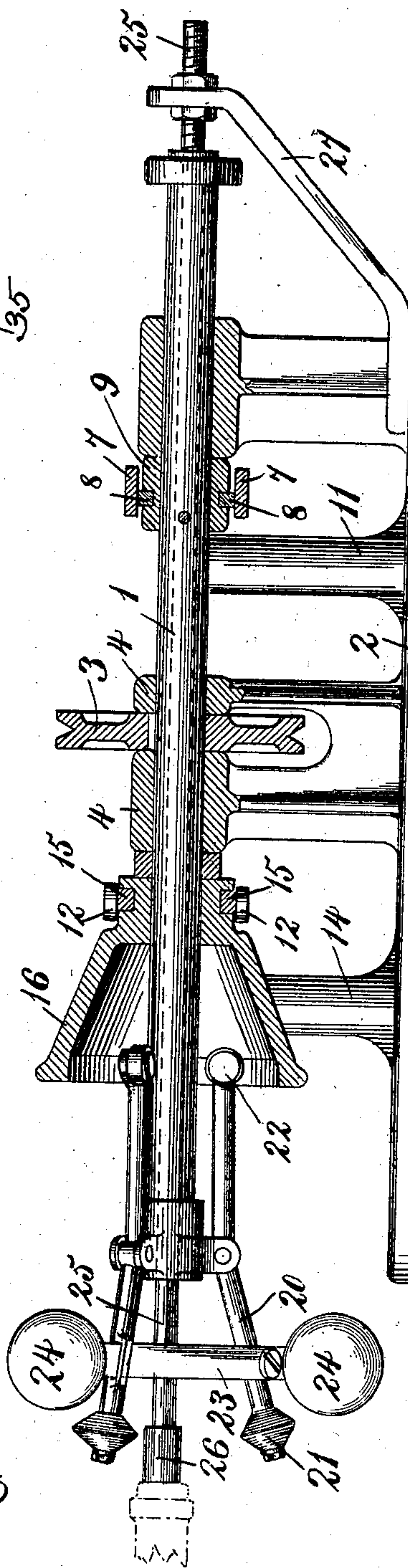


Fig. 5,

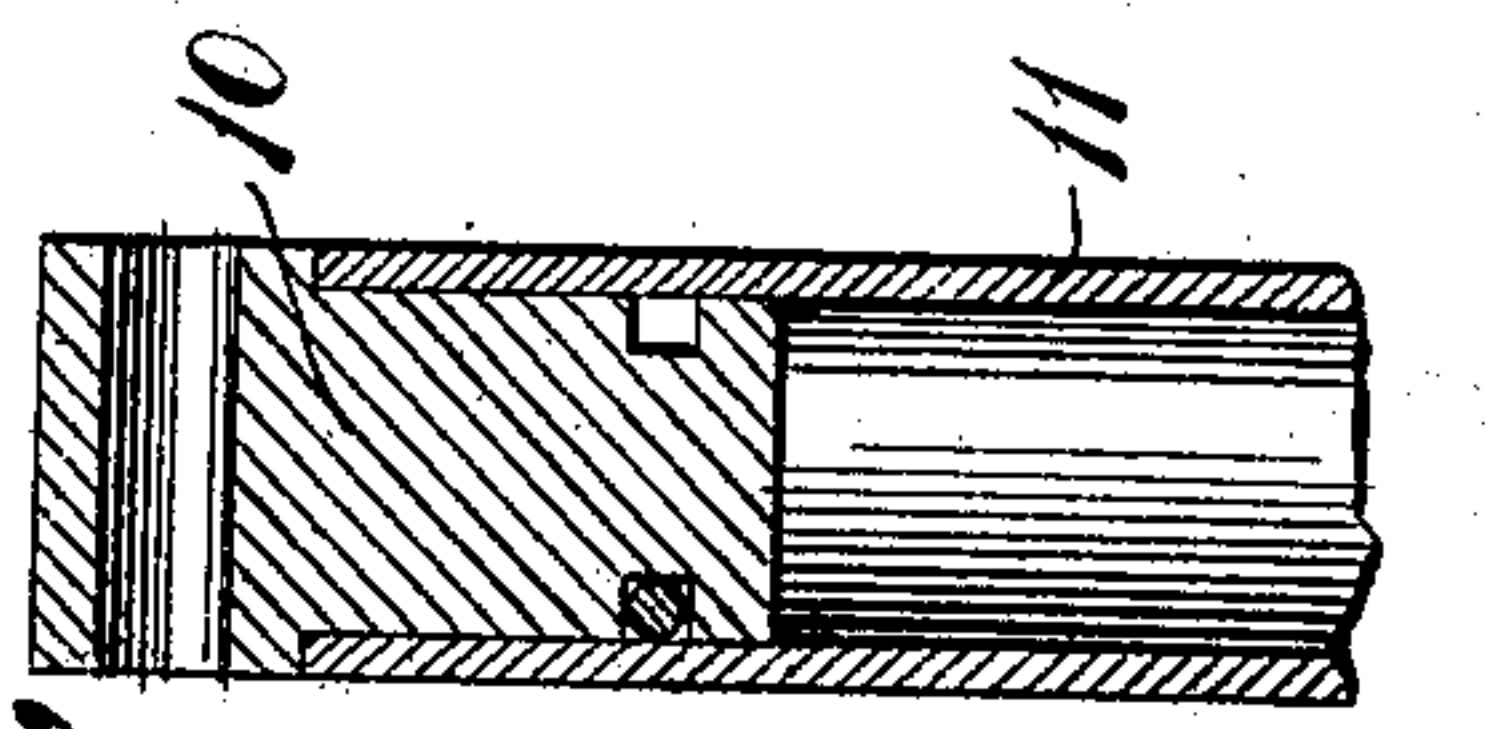


Fig. 4,

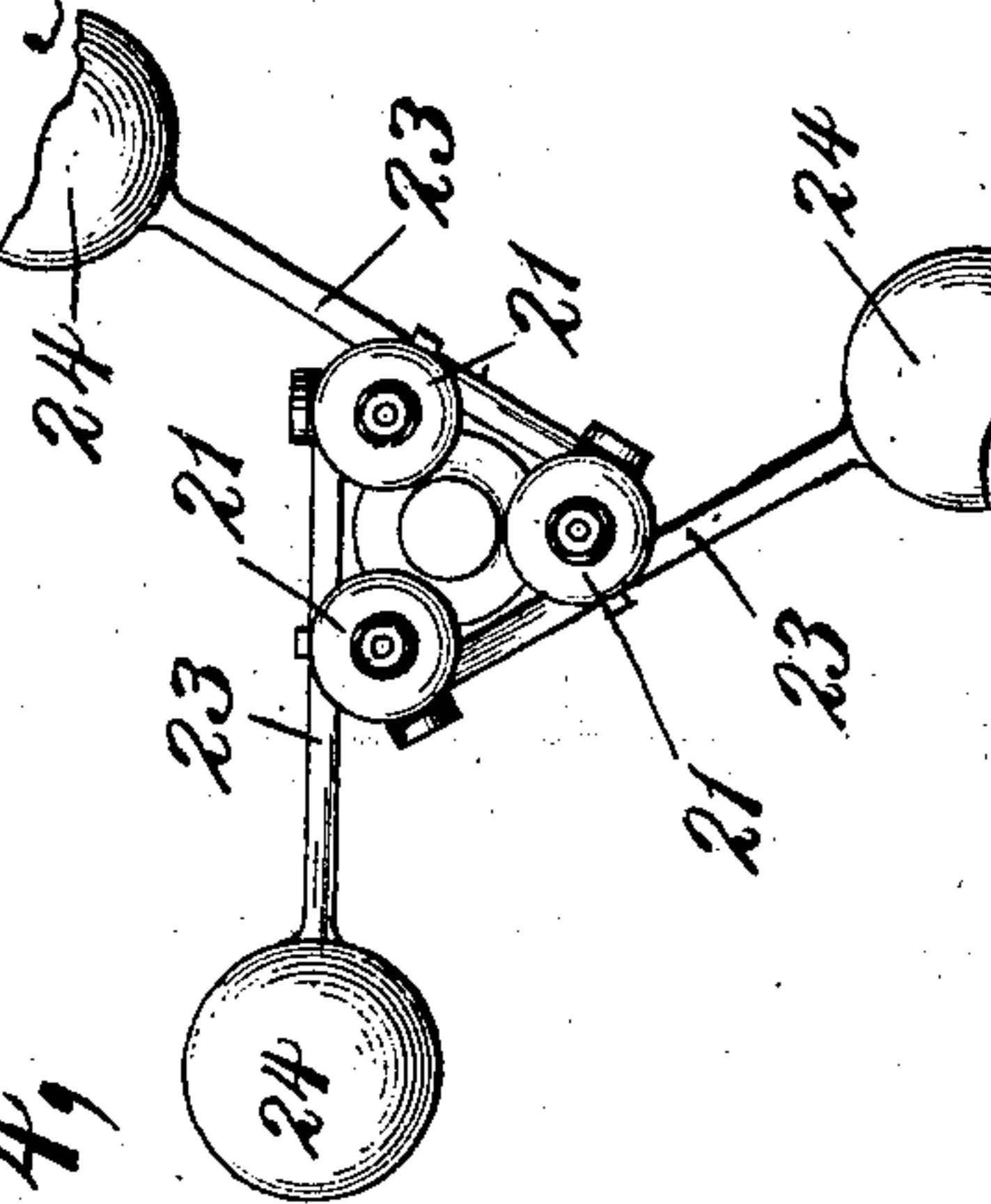
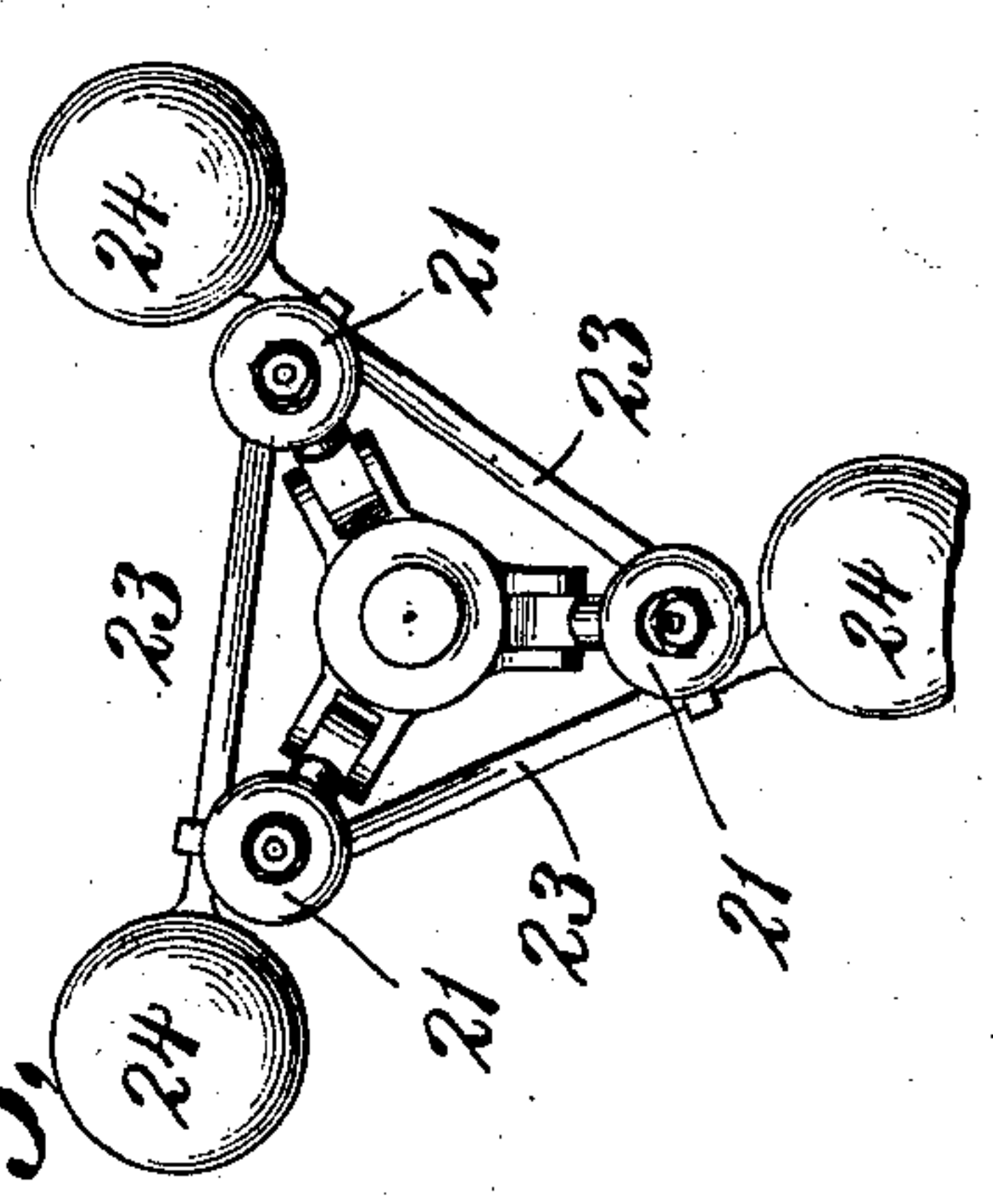


Fig. 3,



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# UNITED STATES PATENT OFFICE.

CHARLES LOUIS DU VIVIER, OF NEW YORK, N. Y.

## BOTTLE-CAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,570, dated February 17, 1903.

Application filed September 23, 1901. Serial No. 76,131. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LOUIS DU VIVIER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Bottle-Capping Machines; and I 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.

My invention relates to improvements in machines for capping bottles—that is to say, for applying to bottles the lead-foil caps with which the corks of wine and various other bottles are customarily covered.

My invention consists in the use, in connection with spinning-heads for spinning the caps down upon the bottle-necks, of means for automatically disengaging such spinning-heads from the bottle when the end of the cap has been reached and automatically holding them disengaged during the return movement.

Heretofore capping-machines employing spinning-heads and the like for spinning caps down upon the necks of bottles have been devised; but such machines have not in practice proved successful, owing to the absence of provision for disengaging the spinning-heads during their return movement. If the heads be in contact with the cap during the return movement, they tend to tear and mutilate the cap or to loosen it. This is objectionable, even if it occurs only occasionally, for the caps used are often expensive. For this reason it is still customary to apply the better grade of caps, at least, by hand at a very considerable expense.

The objects of my invention are to avoid occasion for applying the caps by hand, to avoid the mutilation of caps by the capping-machine, and to make the machine as simple, compact, inexpensive, durable, and easily operated as possible. These objects are attained in the invention herein described and illustrated in the drawings which accompany and form a part of this specification, in which—

Figure 1 is a top view of one form of machine embodying my invention. Fig. 2 is a central vertical section of the machine. Fig. 3 is a detail view showing the method of mounting the centrifugal weights, said weights and

the spinning-heads being shown in the position of rest. Fig. 4 is a similar view of said parts shown in the running position. Fig. 5 is a longitudinal section of one of the swivel-posts; and Fig. 6 is a detail view, on a larger scale, showing how the centrifugal weights may be adjusted.

In the drawings numeral 1 designates a revoluble and longitudinally-movable shaft supported in bearings in brackets projecting from the bed-plate 2. It may be driven by a belt-wheel 3, connected to the shaft by a spline, so as to permit longitudinal movement of the shaft, or by any other suitable means. In the drawings the wheel 3 is shown as held against longitudinal movement by means of brackets 4 4, in which the shaft has bearings. The shaft 1 is hollow for a reason hereinafter set forth.

7 designates an operating-lever, having pins 8 working in a groove of a collar 9, secured to the shaft and carried at one end by a swivel-head 10, revolubly mounted in a post 11. The lever 7 is not rigidly secured to the swivel-head 10, but may have some movement therein to compensate for its rectilinear movement at its point of connection with the collar 9. An arm 12 is similarly mounted on a similar swivel-head 13, carried by a post 14, and is provided with pins 15, working in a groove of a conical cam 16, mounted upon the shaft 1, but capable of longitudinal movement with respect thereto.

A link 17, pivotally connected to the operating-lever 7, has a slot 18, in which a pin 19, carried by the arm 12, may work. The pin 19 is located much closer to the axis of swivel-head 13 than is the point of connection of link 17 to arm 7 with respect to the axis of swivel-head 10. When the operating-lever 7 is moved to the left of Fig. 1 from the position shown in that figure, arm 12 is not moved at first, because of the slot 18 in link 17; but when the end of that slot is reached arm 12 is moved about its pivot, thereby moving the cam 16 to the left, and since the radius of the point of connection of link 17 to arm 7 is greater than the radius of the point of connection of said link to arm 12 cam 16 will be moved to the left with greater linear velocity than that of shaft 1—in other words, it will be moved to the left with respect to said shaft.

To shaft 1 are pivoted a plurality of arms 20, arranged substantially parallel with re-



spect to the shaft and provided at one end with spinning-heads 21 and at the other end with friction-rollers 22. The spinning-heads may be formed of ivory or any other suitable material. To each arm 20 is connected a link 23, passing through a guide in another of the arms 20 and carrying at its free end a centrifugal weight 24. When the shaft 1 rotates, these centrifugal weights tend to fly outward, so drawing the spinning-heads 21 closer together. Within the bore of the hollow shaft 1 is a rod 25, provided at one end with a head 26, against which the top of the cap may be pressed while it is being spun upon the neck of a bottle, and at its other the rod 25 is supported by bracket 27. This end is screw-threaded and is provided with adjusting-nuts, whereby the rod 25 may be adjusted in position longitudinally.

The operation of the machine is as follows: Customarily the machine is mounted with the shaft 1 in a horizontal position. The operator standing at the left of the machine, as viewed in Fig. 1, takes a corked bottle in one hand and placing a cap over the cork and over the neck of the bottle presses the cap against the head 26. He then grasps the lever 7 and moves the same to the left, as viewed in Fig. 1, whereby the spinning-heads then rapidly revolving are drawn by their centrifugal weights 24 inward and against the cap. The rapid rotary movement of these spinning-heads, together with their longitudinal movement, due to the continued motion of the arm 7, causes these spinning-heads to spin the cap firmly down upon the neck of the bottle. During the earlier motion of the arm 7 there is no motion of the arm 12 and cam 16, except as said cam may rotate with shaft 1; but when the pin 19 is picked up by the link 17, the end of the slot 18 having been reached, the cam 16 is moved rapidly to the left and quickly engages the friction-rollers 22 upon the ends of the arms 20, thereby pressing inward the ends of the arms and pressing the spinning-heads away from the neck of the bottle. This disengagement of the bottle occurs when the spinning-heads have passed the end of the cap, and the rod 25 may be adjusted in position so that this shall be so. The spinning-heads having been moved away from the bottle, the arm 7 may be moved backward again, and during the backward movement of the arm reengagement of the spinning-heads with the bottle is prevented by a link 28, pivoted to the arm 7, and which when the cam 16 has pressed outward the spinning-heads engages a pin 29 on the arm 12, said pin entering a notch 30 in the end of link 28. A spring 31 moves the link 30 into engagement with the pin 29 as soon as said pin arrives opposite the notch 30. Link 28 is a spacing-link and holds the cam 16 stationary longitudinally with respect to the shaft (the slot 18 in link 17 permitting this) until the spinning-heads have passed the end of the bottle, after which time a lug 32 on the link 28 encounters a stud

33, causing the link 28 to move to one side sufficiently to disengage the pin 29, whereupon arm 12 and cam 16 are drawn back by a spring 34. The link 28 is adjustable in length, as shown in Fig. 1, so that by adjusting it the release of the arm 12 may be caused to take place at the proper time. The operator may then move the spinning-heads over the same cap a number of times, if desired, said heads being disengaged from the neck of the bottle each time the arm 7 is moved backward; but ordinarily it is sufficient to move the spinning-heads over the cap once only.

If desired, the centrifugal weights 24 may be rendered adjustable along their links 23, thereby making it possible to vary the pull exerted by these weights upon the spinning-heads without changing the speed of driving of the machine. Fig. 6 illustrates one construction by which this may be accomplished. In that figure the link 23 there shown is provided with a series of holes through which may be passed a screw-pin 35, whereby the weight 24 may be secured at any one of a number of places along said link. The pin passes through a hole in the weight, its rectangular head being recessed into the weight in order to prevent the pin from turning, and a nut 36 is arranged both to screw upon the opposite end of the pin and to screw into a recess in the weight, the screw-threads upon the outside and inside of the nut being of different pitch, so that the nut when turned up tightly exerts a powerful clamping effort, which effectually prevents unscrewing of the nut; but I do not limit myself to this particular method of fastening the centrifugal weights in different positions along their links or to this particular method of varying the centrifugal effort of the centrifugal weights.

The machine herein illustrated and described is capable of many modifications in construction, arrangement of parts, and operation, and I do not limit myself to the particular construction illustrated and described.

Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bottle-capping machine, the combination with a spinning device for spinning a cap on a bottle, and means for operating the same, of a cap-holding device, means permitting relative longitudinal movement between the bottle and spinning device during the operation of the latter, and automatic disengaging means for disengaging the spinning device from the cap while the latter is still within the range of action of the spinning device, said disengaging means comprising means for holding the spinning device disengaged during reverse relative movement between the bottle and spinning device.

2. In a bottle-capping machine, the combination, with a rotatable and longitudinally-movable spinning device for spinning a cap on a bottle, means for rotating the same, and means for moving the same, during its rota-



tion, over a cap on a bottle and then back, of a cap-holding device and means for disengaging the spinning device from the cap during such return movement.

5 3. In a bottle-capping machine, the combination, with spinning-heads, adapted to receive between them the neck of a bottle, said heads being revolubly and longitudinally movable, of means for driving said heads, for  
10 moving them longitudinally over a cap on a bottle and back, and for pressing them against said cap during the forward movement, and means operated by so moving said heads for  
15 disengaging said heads from the cap during their return movement.

4. In a bottle-capping machine, the combination, with spinning-heads, adapted to receive between them the neck of a bottle, said heads being revolubly and longitudinally  
20 movable, of means for driving said heads, for moving them longitudinally over a cap on a bottle and back, and for pressing them against said cap during their forward movement, and a disengaging device operated by so moving  
25 said heads for disengaging said heads from the cap during their return movement.

5. In a bottle-capping machine, the combination, with spinning-heads adapted to receive between them the neck of a bottle, said  
30 heads being revolubly and longitudinally movable, of means for driving said heads, for moving them longitudinally over a cap on a bottle and back, and for pressing them against said cap during their forward movement, a  
35 disengaging-cam operated by so moving said heads for disengaging the heads from the cap, and means for operating the same and holding the heads disengaged during the return  
40 movement until the head of the bottle has been passed.

6. In a bottle-capping machine, the combination, with spinning-heads, adapted to receive between them the neck of a bottle, said  
45 heads being revolubly and longitudinally movable, of means for driving said heads, for moving them longitudinally over a cap on a bottle and back, and for pressing them against the cap during their forward movement, a  
50 disengaging-cam for disengaging the heads from the cap, means operated by so moving said shaft for operating the same when the end of the cap has been reached, and means  
55 for holding the heads disengaged during their return movement until the head of the bottle has been passed.

7. In a bottle-capping machine, the combination, with a shaft revolubly and longitudinally movable, a spinning device for spinning  
60 a cap on a bottle carried thereby, and means for driving the shaft and for moving it longitudinally, of a disengaging-cam, for disengaging said spinning device and holding it  
65 disengaged during the return movement of the shaft and spinning device, and means operated by so moving said heads for operating said cam and for holding the spinning  
device disengaged from the cap when the end

of the latter has been reached in the forward movement of the spinning device, and until the head of the bottle has been passed during the return movement. 70

8. In a bottle-capping machine, the combination, with a shaft revolubly and longitudinally movable, a spinning device for spinning  
75 a cap on a bottle carried thereby, means for driving the shaft, and a pivoted operating-arm for moving it longitudinally, of a disengaging-cam, movably mounted, for disengaging said spinning device, a pivoted arm for  
80 moving said cam, a link pivoted to the operating-arm and having a slotted connection with the cam-arm at a point having a smaller radius than the radius of the point of connection of said link to the operating-arm, where-  
85 by the cam is operated after the spinning device has advanced over the cap, a spacing device for holding the cam during the return movement of the spinning device, and means  
90 for releasing the spacing device and returning the cam.

9. In a bottle-capping machine, the combination, with a shaft revolubly and longitudinally movable, arms pivoted thereto and carrying spinning-heads, means for driving the  
95 shaft, means for pressing the spinning-heads against the neck of a bottle, and a pivoted operating-arm for moving the shaft longitudinally, of a disengaging-cam, mounted on said shaft and longitudinally movable thereon, and adapted to engage the arms carrying the  
100 spinning-heads and thereby to disengage the same from a capped bottle, a pivoted arm for moving said cam, a link pivoted to the operating-arm and having a slotted connection with the cam-arm at a point having a smaller  
105 radius than the radius of the point of connection of said link with the operating-arm, a spacing-link for holding the cam in engagement with the spinning-head arms during the return motion of the shaft, means for bring-  
110 ing said link into operation, and means for tripping said link and returning the cam, when the head of the bottle has been passed.

10. In a bottle-capping machine, a spinning device comprising a revoluble member, arms  
115 pivoted thereto and carrying spinning-heads, and centrifugal weights connected each to one of said arms and guided by another of said arms, and tending, when rotated, to draw the spinning-heads together. 120

11. In a bottle-capping machine, a spinning device comprising a revoluble member, arms pivoted thereto and carrying spinning-heads, and centrifugal weights connected each to  
125 one of said arms but adjustable in distance therefrom and guided by another of said arms, and tending, when rotated, to draw the spinning-heads together.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES LOUIS DU VIVIER.

Witnesses:

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A. H. PERLES.