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PATENTED SEPT. 24, 1907.

E. T. RYAN.
BOTTLE SEALING MACHINE.
APPLICATION FILED SEPT. 25, 1905.

2 SHEETS—SHEET 1.

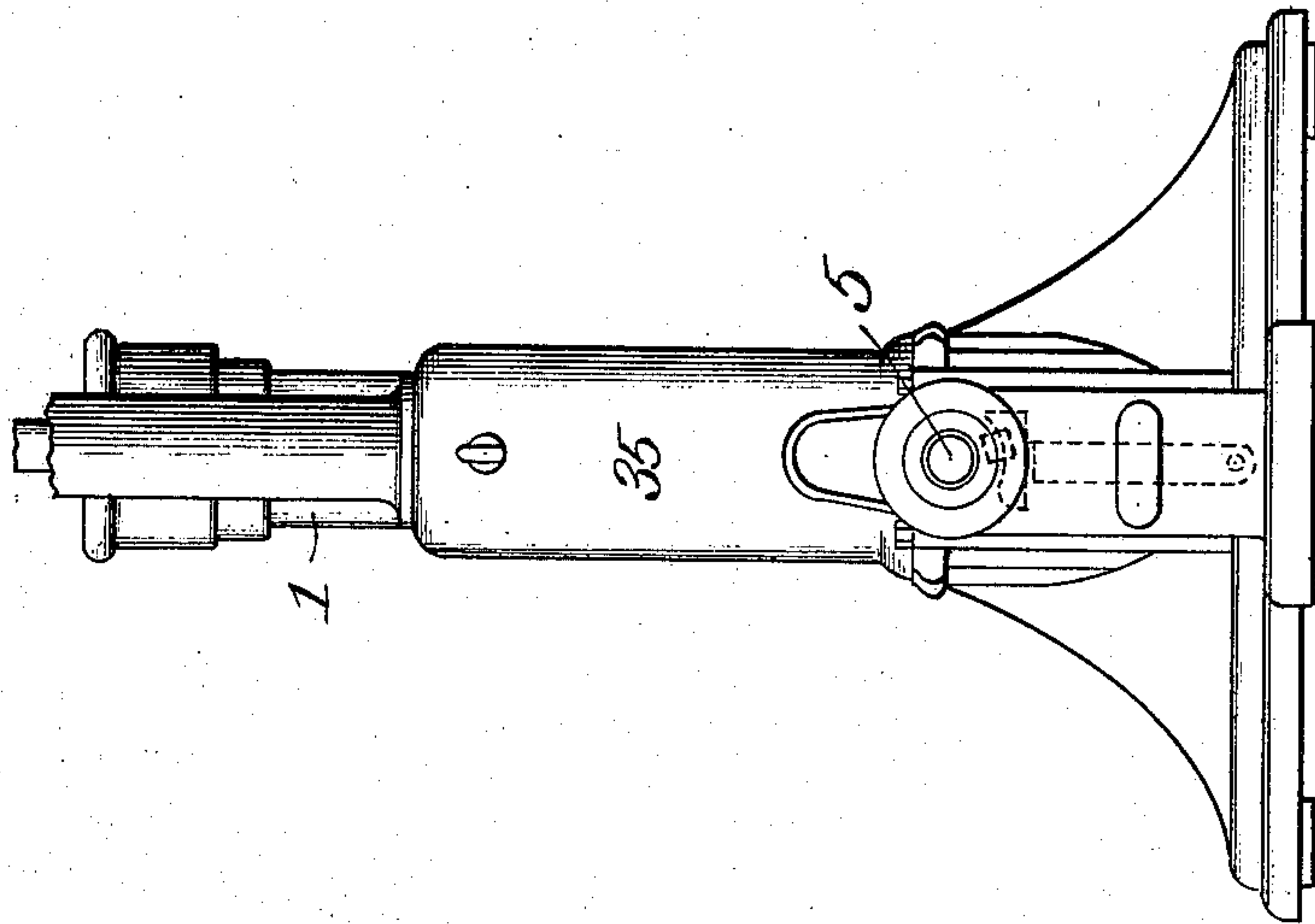


Fig. 2.

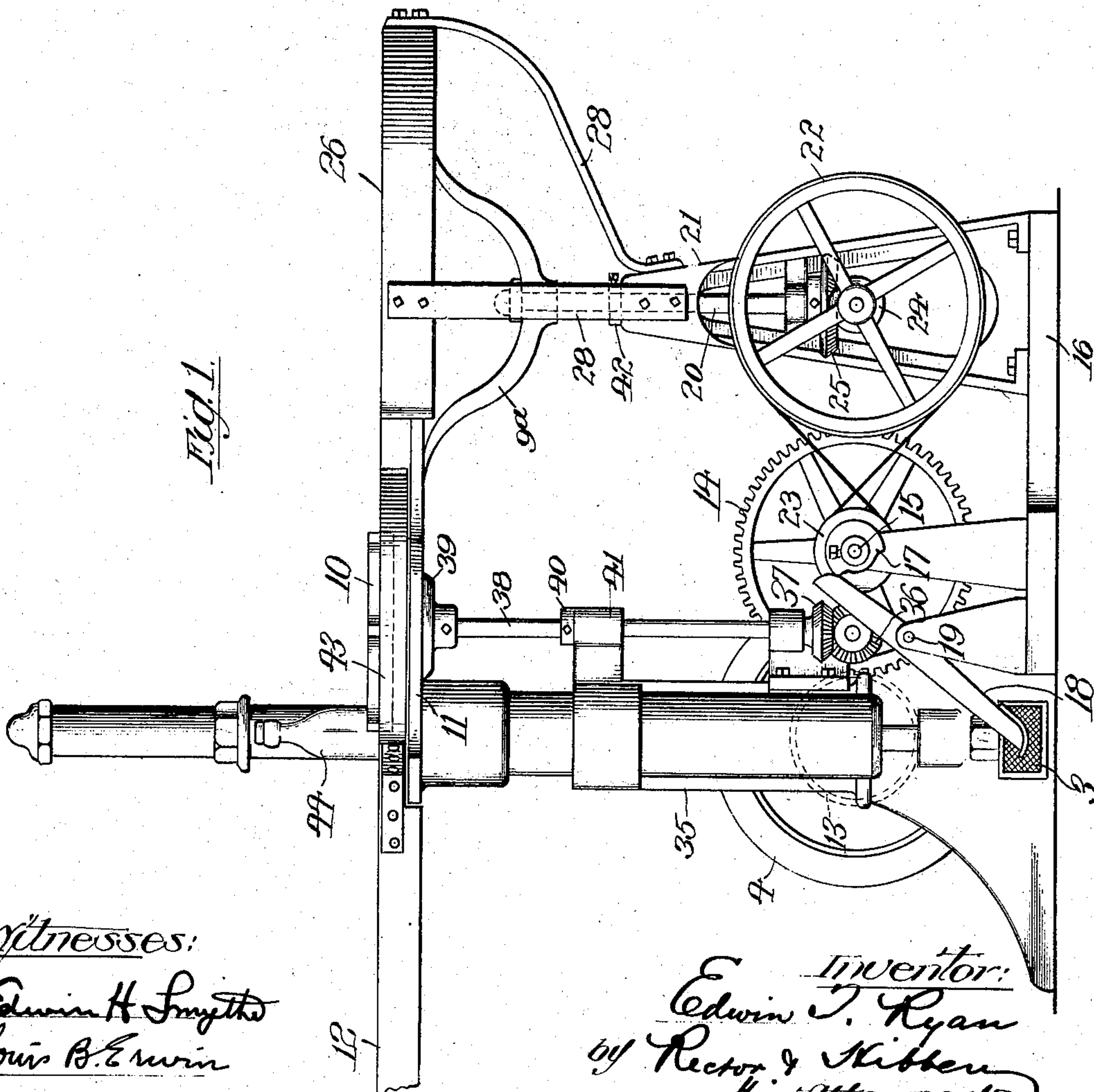


Fig. 1.

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Inventor:
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His Attorneys

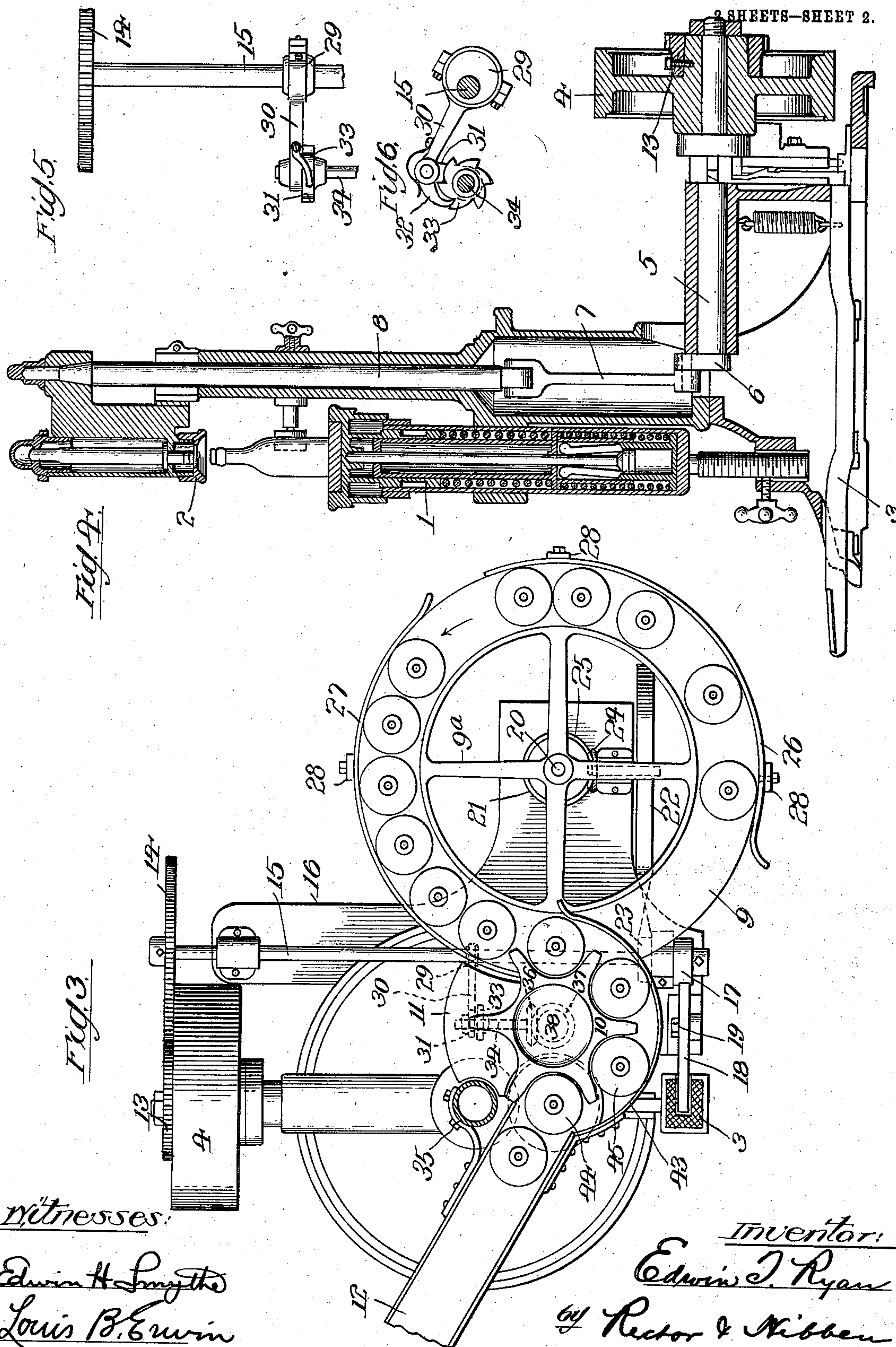
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UNITED STATES PATENT OFFICE.

EDWIN T. RYAN, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO HENRY SCARBOROUGH, OF CHICAGO, ILLINOIS.

BOTTLE-SEALING MACHINE.

No. 867,213.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed September 25, 1905. Serial No. 279,982.

To all whom it may concern:

Be it known that I, EDWIN T. RYAN, a citizen of the United States, residing at the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Bottle-Sealing Machines, of which the following is a specification.

My invention relates to bottle sealing machines and the object thereof is to provide novel and efficient means for automatically feeding the bottles to such machines, with the result that usual hand operations heretofore required, for placing the bottles in position to be sealed and for starting the operation of the machine, are avoided.

According to the present embodiment of my invention, as herein shown and hereinafter described the bottles are automatically fed to and pass through the sealing machine and the machine automatically started and the sealing device of the machine caused to operate at the moment when the bottle is in proper position to be acted upon by such sealing device.

In the drawings Figure 1 is a side elevation of a bottle sealing machine of well-known construction with my automatic attachment connected therewith; Fig. 2 an elevation of a portion of the other side of the machine; Fig. 3 a plan view of a sealing machine together with my automatic attachment; Fig. 4 a sectional elevation on the line 4—4 of Fig. 1; and Figs. 5 and 6 detail views of the actuating mechanism of the wheel 34.

As hereinbefore stated my invention comprises an automatic attachment arranged to be connected with or incorporated in a bottle sealing machine, and in the present instance I have chosen to illustrate and describe my invention as an attachment to a well-known construction of sealing machine.

As the construction and mode of operation of this machine is well known to those skilled in the art it will be unnecessary to describe such machine in detail, and hence a general description only will be given.

In operating the sealing machine according to the old process the operator placed a bottle on the top of the spring cylinder 1 in proper position under the crowning head 2 to be operated upon by the latter as illustrated in Figs. 1 and 4. Heretofore the next operation has been the depressing of the treadle 3 by the operator for the purpose of operatively connecting the constantly rotating fly-wheel or pulley 4 with the crank-shaft 5 in the well-known manner, with the result that the crowning head will be depressed through the medium of the crank 6, pitman 7 and plunger-rod 8, which is operatively connected with the crowning head. The construction is such that after one complete rotation of the crank 6 its crank-shaft 5 is disengaged from its driving member, the pulley 4, so that the crowning head is prevented from operating a second time until the op-

erator has placed a second bottle in position and has depressed the treadle.

The object of my invention, as hereinbefore suggested, is to make the sealing machine entirely automatic as to the operations just described, the only manual labor being that required to place the bottles on a revolving table, the bottles being automatically carried and placed in position beneath the crowning head in an automatic manner and being also passed through the machine and delivered therefrom in an automatic manner, and likewise the machine is automatically started or caused to operate in an automatic manner for the purpose of sealing the particular bottle in position below the crowning head. According to the present embodiment of my invention the means for accomplishing these results is an attachment comprising essentially a rotating feed table 9 for feeding the bottles to a horizontally disposed sprocket wheel 10 arranged above a horizontal table 11 beneath the crowning head 2, which sprocket wheel has a step by step movement for passing bottles through the machine and for properly positioning them under the crowning head and for delivering the bottles automatically through a chute 12 or other equivalent mechanism for delivering the sealed bottles to a proper point of delivery.

Referring to the mechanism for driving the parts of my automatic attachment in the proper manner and at the proper speed, I arrange upon the outer rim of the pulley 4 a gear 13 (Fig. 3) which is arranged to mesh with a gear 14 having twice the number of teeth as the gear 13, and consequently making one revolution to two revolutions of such gear 13. The gear 14 is secured to a shaft 15 which is suitably journaled in bearings attached to a base-plate 16, conforming to the contour of the base of the regular Crown machine, and attached thereto in suitable manner so as to be maintained in fixed relation thereto. The shaft 15 carries at its end away from the gear 14 a cam 17, Figs. 1 and 3, which is arranged to operate or rock a treadle lever 18 pivoted or fulcrumed intermediate its length upon an axis 19 and arranged to engage and operate the treadle 3 at the proper instant.

Referring next to the mechanism for driving the feed table 9, such table is carried by a spider frame 9^a at the upper end of the vertical shaft 20 having suitable bearings in standards 21 rising from the base-plate 16 of the machine, Fig. 1. The shaft 20 is driven in suitable manner by operating connections with the main driving shaft 15 of the machine and in the present instance such connections consist of a pulley 22 belted to a similar pulley 23 on the main shaft 15 and provided with a bevel gear 24 arranged to mesh with and drive another bevel gear 25 secured to the lower end of the shaft 20. By reason of the construction and arrangement just de-

scribed the feed table is caused to rotate in the direction of the arrow, as indicated in Fig. 3, for the purpose of conveying the bottles which have been previously placed upon it toward the operating point of the machine. As herein shown, suitable stationary guards 26 and 27 are arranged at opposite sides of the feed table and adjacent its periphery for preventing the bottles from falling off such table. In the present instance these guards are supported at the upper ends by braces or strips 28 secured at their lower ends to the standards or supports 21. The provision of two separate guards instead of a single guard extending nearly around the feed table represents a preferred construction, as the present arrangement provides two separate feed openings whereby the bottles may be fed to the table at two different points.

Along the length of the main shaft 15, in the present instance midway thereof, as seen in Figs. 3, 5, and 6, is arranged the eccentric 29 connected by a reciprocating rod 30 to a rocking lever 31 which in turn carries a spring pressed pawl 32 engaging a ratchet wheel 33. The object of this construction is to give the sprocket wheel 10 hereinbefore referred to an intermittent or step by step rotary movement, and to this end and according to the present construction the ratchet wheel 33 is secured to one end of a short shaft 34 suitably journaled on the machine column or cylinder 35, Figs. 1 and 3, and provided at its other end with a bevel gear 36. This bevel gear engages another bevel gear 37 which is secured to the lower end of a vertical shaft 38 having suitable bearings on said machine column. This shaft 38 carries at its upper end the sprocket wheel 10 which is driven with a step by step movement through the medium of the operating connections just described.

The stationary platform 11, hereinbefore referred to, is supported by a large flanged collar 39, Fig. 1, and for the purpose of adjusting the height of such table, the shaft 38 is provided with a set collar 40 arranged to be adjusted on such vertical shaft 38 and to cooperate for this purpose with a bearing on this shaft. In like manner the table 9 may be lowered or raised to accommodate the various heights of bottles being operated upon and in like manner its driving shaft 20 is provided with a set collar 42 arranged to cooperate with the upper end of the standard 21 to maintain the table 9 in the proper adjusted position. Around the front side of the table 11 is arranged a stationary guard 43 similar to the guards 26 and 27 and adapted to compel the bottles being driven by the sprocket wheel 10 to follow a predetermined track or path while being passed through the machine or driven by the sprocket wheel 10 towards the center of the spring cylinder 1.

In practice, assuming that bottles have been placed upon the feed table 9 and the machine has been operated sufficiently to bring a bottle to the place of action upon the spring cylinder 1, that is, to the particular position occupied by the bottle 44 in Fig. 3, the crowning head is automatically operated at the instant when such bottle reaches such position, such crowning head being automatically operated by the automatic depression of the treadle 3, through the medium of the treadle lever 18 and cam 17 which is driven by the main shaft 15 of my attachment. This depressing of the crowning head effects the sealing operation, after which such head is returned to its original or highest position, as indicated

in the drawings, ready for the next operation when the next succeeding bottle is automatically placed in position on the spring cylinder 1 by the next intermittent or step movement of the sprocket wheel 10, which is given such step movement through the medium of the ratchet drive mechanism between its shaft 38 and the main operating shaft 15 of my attachment.

According to the present embodiment of my invention the sprocket wheel 10 is provided with six sprockets with the result that the ratchet mechanism at each operation imparts one-sixth of a revolution to the shaft 38 and its sprocket wheel. On the first revolution of the pulley 4 a one-half revolution is imparted to the shaft 15 causing the eccentric 29 to draw the rod 30 and the rocking lever 31 together with its spring pawl 32 back to a position where the pawl engages a tooth in the ratchet wheel 33 and is in position to impart one-sixth of a revolution to the short shaft 34. Upon disconnection between the crank-shaft 5 and the pulley 4 during the first revolution of the crank-shaft, such shaft remains stationary during the next or second revolution of the pulley and the second revolution of the latter completes the last half of the revolution of the driving shaft 15 with the result that the eccentric 29 is thrown to extreme opposite position and through the ratchet connections just described advances the next bottle marked 45 to the position occupied by bottle 44 in Fig. 3. The bottle 44 is displaced by the next succeeding bottle 45 and forced into the extension or chute 12, it being understood that the same relative positions of the other bottles have been advanced the same distance, and that the sprocket wheel has engaged the next bottle which has been delivered to it in automatic manner by the feed table 9 revolving continuously in the direction of the arrow. These operations are repeated and the automatic feeding, positioning, sealing and delivering of the bottles is continued so long as the bottles are supplied to the feed table 9 by the attendant or operator.

It is thus evident that the bottles are fed or presented to the bottle-sealing device with an intermittent or step by step movement, such feeding and presenting of the bottles being accomplished in the present instance by the sprocket wheel, while the bottles are fed to such sprocket wheel continuously inasmuch as the feed table 9 revolves continuously so long as the machine is in operation, with the result that the bottles are always pressing against the sprocket wheel and ready to enter between the teeth thereof as soon as permitted by the movements of such sprocket wheel. Of course inasmuch as the feed table is thus continuously revolving the same will slide beneath those particular bottles which are ready to enter the sprocket wheel, but such sliding will occur only when the sprocket wheel is stopped. It will be understood that the shaft 15 is continuously rotated through the medium of the gears 13 and 14, the former of which is secured to and rotated by the pulley 4, while the sprocket wheel 10 receives intermittent movement from the driving shaft 15 by reason of the ratchet drive connections hereinbefore referred to and particularly illustrated in Figs. 5 and 6 of the drawings.

In operating the sealing machine herein illustrated and other machines of similar character, it is necessary after the action of the machine has sealed the

bottle, for the operator to remove the particular bottle which has just been operated upon and to place another bottle in suitable position for a repetition of the sealing operation by the machine.

5 By the use of my device which may be embodied or incorporated in new machines or, as herein shown, may be formed as an attachment applied to sealing machines now in use, the bottles are automatically supplied to the sealing machine and are automatically removed therefrom, with the result that the operator is not only relieved from this labor but the process or operation is materially expedited, resulting in a larger number of bottles being sealed by the operator in a given time.

15 I claim:

1. In combination with a bottle sealing machine, automatic means for feeding the bottles to the machine and starting the machine for the sealing action.

20 2. In combination with a bottle sealing machine, and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, means operating with an intermittent movement for moving the bottles on the table and presenting them to the sealing device, and means for automatically and continuously feeding the bottles to said table.

25 3. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in a plane above said table for engaging and presenting the bottles to the sealing device, and automatic means for continuously feeding the bottles to the sprocket wheel and causing them to continually press against such wheel.

30 4. In combination with a bottle sealing machine, and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in the plane above said table for engaging and presenting the bottles to the sealing device, and a revolving table for feeding the bottles to the sprocket wheel.

40 5. In combination with a bottle sealing machine, and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in a plane above said table for sliding the bottles on the table and presenting them to the sealing device, a revolving table for feeding the bottles to the sprocket wheel, and a delivery chute cooperating with the stationary table.

50 6. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in a plane above said table for engaging and presenting the bottles to the sealing device, and a guard adjacent said table to confine the bottles within the wheel.

55 7. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in a plane above said table for sliding the bottles thereon and presenting them to the sealing device, a revolving table for feeding them to the sprocket wheel, and a guard adjacent the edge of the latter table for confining the bottles thereon.

60 8. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, and on which the bottles are adapted to slide, a sprocket wheel rotating in a plane above said table for sliding the bottles thereon and presenting them to the

sealing device, a continuously revolving table for feeding the bottles to the sprocket wheel, and a pair of guards arranged adjacent the edge of the latter table and providing two points of bottle supply. 70

9. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, a sprocket wheel rotating in a plane above said table for presenting the bottles to the sealing device, a revolving table for feeding the bottles to the sprocket wheel, and a guard cooperating with the stationary table and projecting across the vertical plane of said revolving table to intercept the bottles thereon and guide them to the sprocket wheel. 75 80

10. In combination with a bottle-sealing machine and its sealing device, a stationary table adjacent the sealing device, a sprocket wheel rotating in a plane above said table and presenting the bottles to the sealing device, a revolving table for feeding the bottles to the sprocket wheel, a main operating shaft, an operating connection between such shaft and the sprocket wheel for operating such wheel with a step by step movement and an operating connection between such shaft and the revolving table for continuously revolving the latter. 85 90

11. In combination with a bottle sealing machine and its sealing device, a stationary table adjacent the sealing device, a sprocket wheel rotating in a plane above said table for presenting the bottles to the sealing device, a revolving table for feeding the bottles to the sprocket wheel, a main operating shaft, a ratchet drive connection between said shaft and the sprocket wheel, and a driving connection between the shaft and the revolving table. 95

12. In combination with a bottle sealing machine and its starting and stopping mechanism, intermittently operated means for presenting the bottles to the sealing device of the machine, continuously operating mechanism for feeding bottles to said means, an operating shaft operatively connected with said means, and means actuated by said shaft for controlling the action of said starting and stopping mechanism. 100 105

13. In combination with a bottle sealing machine and its starting and stopping mechanism, intermittently operated means for presenting the bottles to the sealing device of the machine, continuously operating mechanism for feeding bottles to said means, an operating shaft, an operating connection with the shaft for imparting a step by step movement to said means, and means actuated by said shaft for controlling the action of said starting and stopping mechanism. 110 115

14. In combination with a bottle sealing machine and its treadle-operated device for starting and stopping the machine, means for presenting the bottles to the sealing device of the machine, and an operating shaft operatively connected with said means and with said treadle for intermittently operating the latter. 120

15. In combination with a bottle sealing machine and its treadle-operated device for starting and stopping the machine, means for presenting the bottles to the sealing device of the machine, an operating shaft operatively connected with said means, a cam on said shaft, and a lever forming an operating connection between said cam and the treadle. 125

16. In combination with a bottle sealing machine and its treadle-operated device for starting and stopping the machine, means for presenting the bottles to the sealing device of the machine, an operating shaft operatively connected with said means, and a cam carried by said shaft for actuating said treadle. 130

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