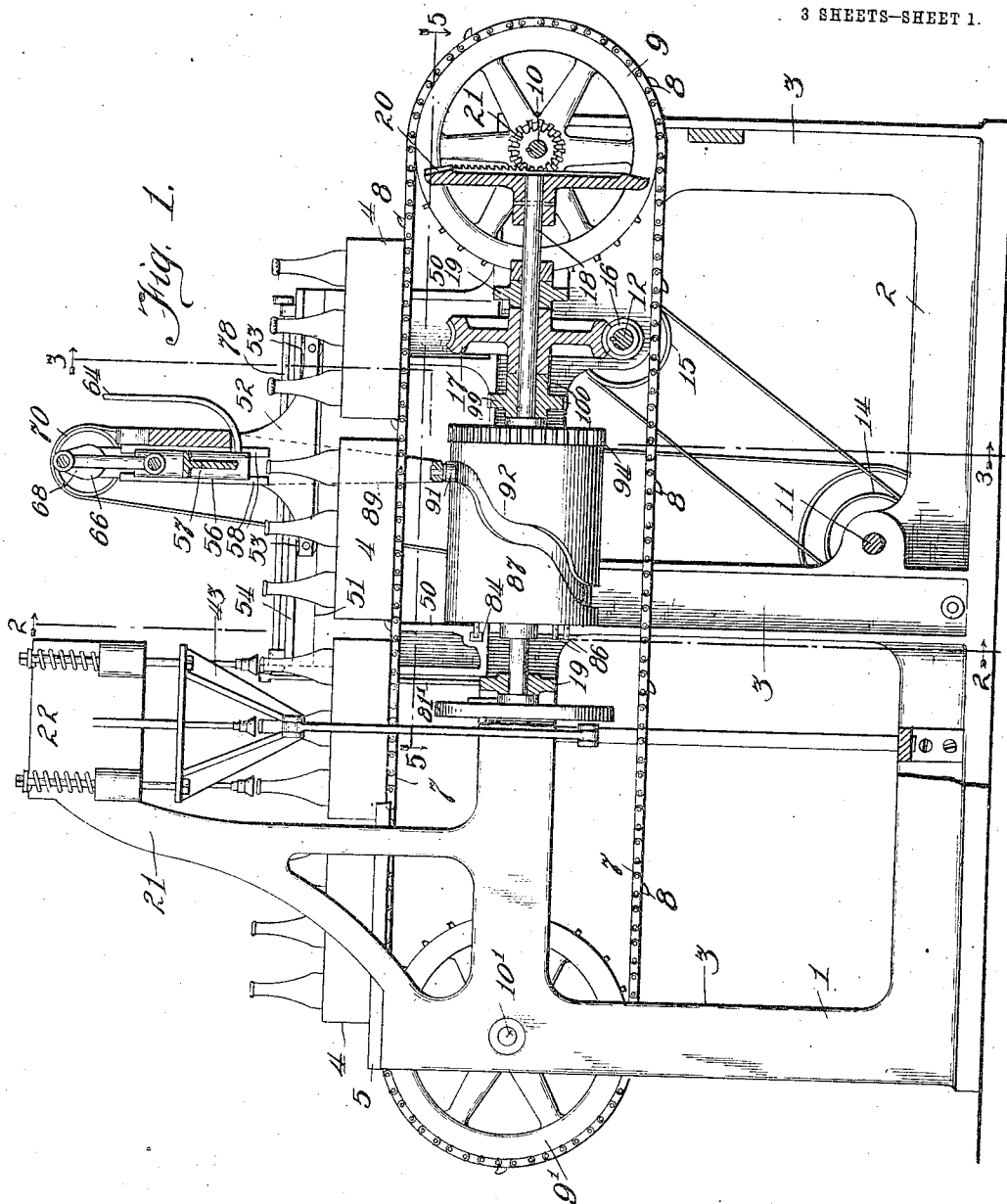


H. J. CHILTON.
BOTTLE CAPPING MACHINE.
APPLICATION FILED AUG. 10, 1908.

990,338.

Patented Apr. 25, 1911.

3 SHEETS—SHEET 1.



Witnesses
Milton Lenoir
F. L. Belknap

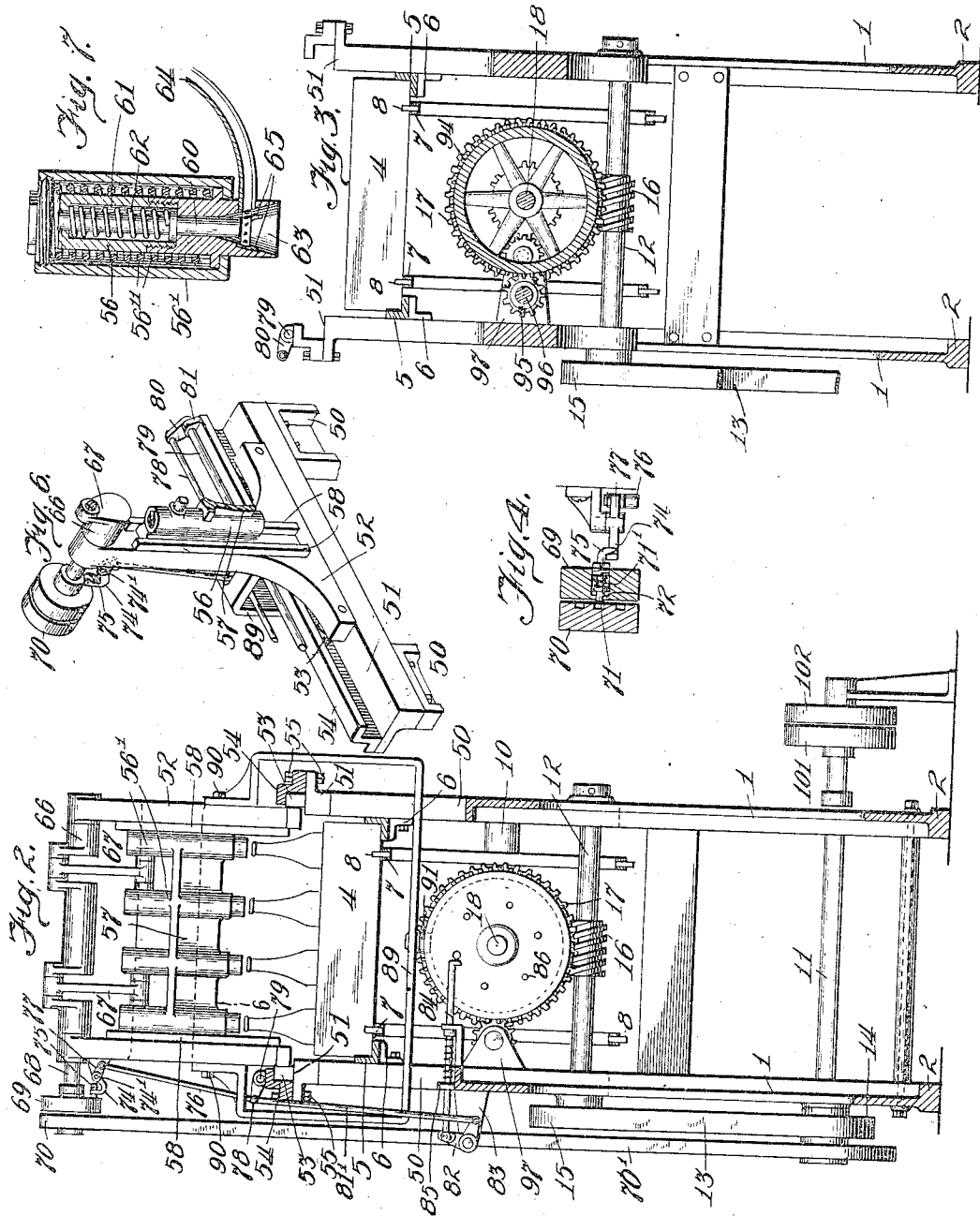
Inventor,
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3 SHEETS-SHEET 2.



Witnesses

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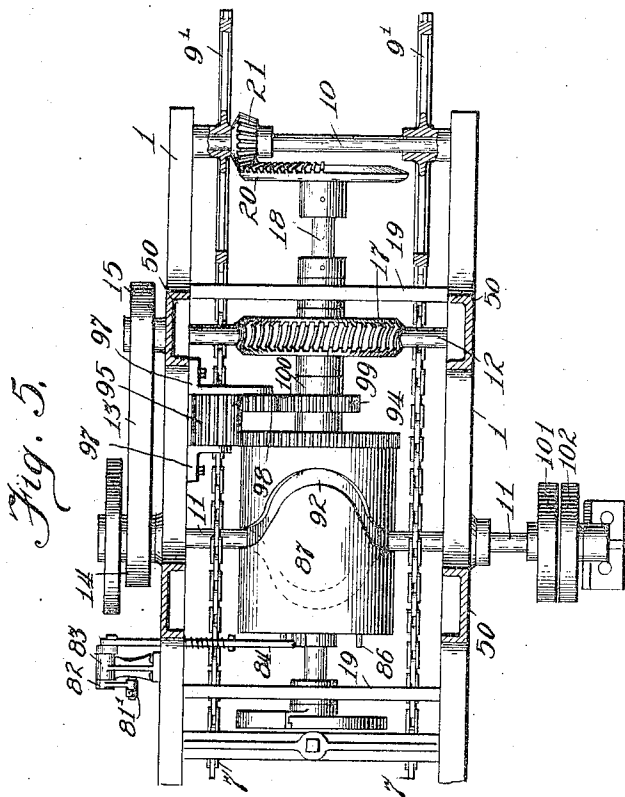
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY J. CHILTON, OF CHICAGO, ILLINOIS.

BOTTLE-CAPPING MACHINE.

990,338.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 10, 1908. Serial No. 447,677.

To all whom it may concern:

Be it known that I, HENRY J. CHILTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

This invention relates to bottle filling and capping machines and has among its salient objects to provide a machine so organized as to handle bottles supported in groups in holders or crates, and including mechanism for conveying the crates to the capping mechanism, and capping the bottles during a dwell in movement of the conveyer; to provide a machine of the character referred to so organized that the crates or holders containing the bottles are advanced step by step and the rows of bottles capped successively; to provide in a machine of the above character novel mechanism for automatically sealing or capping the bottles while within the crates; to provide novel mechanism for effecting suitable timed movements of the several sets of cooperating mechanisms, and in general to provide an improved construction of the character referred to.

The invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

In the drawings—Figure 1 is a side elevation of my invention, parts being broken away and other parts shown in section to more clearly bring out details of construction. Fig. 2 is a transverse sectional view taken on lines 2—2 of Fig. 1 and looking in the direction of the arrows. Fig. 3 is a similar sectional view taken on the indirect line 3—3 and looking in the direction of the arrows. Fig. 4 is a detail sectional view of the clutch mechanism which controls the operation of the capping plungers. Fig. 5 is a horizontal sectional view taken on lines 5—5 of Fig. 1 and looking downwardly. Fig. 6 is a fragmentary perspective view showing the construction of the carriage for the capping mechanism. Fig. 7 is a detail sectional view of one of the capping plungers and showing a portion of the associated feed chute.

Referring to the drawings 1 designates as a whole a skeleton like frame member or casting having a base portion 2 and a series of upright standard members 3 which sup-

port the various operating mechanisms hereinafter described. The bottles which are to be filled and capped are supported in rows in suitable crates or holders 4 which extend transversely of the machine and ride upon a pair of tracks 5 extending longitudinally of the upper part of the main casting and secured to the latter by suitable brackets 6. These crates are carried along on the tracks by a pair of endless conveyers 7 there being one at each side of the machine. Each of these conveyers is provided with a series of up-standing lugs 8 between which the crates are securely confined upon the conveyers as the latter rotate. Each conveyer is trained around a pair of sprocket wheels 9—9' suitably keyed to transversely extending shafts 10—10' respectively journaled transversely between the upright casing members. These conveyers are adapted to be intermittently driven by means of a novel mechanism now to be described. To the above end a main shaft 11 is suitably journaled in the lower part of the main frame and is operatively connected with a parallel shaft 12 journaled in the upper part of the frame, by means of a belt 13 trained around suitable sheaves 14 and 15 keyed to the outer ends of the shafts 11 and 12 respectively. Upon the shaft 12 is fixed a worm 16 which meshes with a worm gear 17 keyed to a counter shaft 18 which extends longitudinally of the machine and is rotatably mounted in suitable journal blocks 19—19'. Near the forward end of the shaft 18 is keyed a mutilated beveled gear 20 which meshes with a similar smaller gear 21 keyed upon the conveyer shaft 10. The teeth of this mutilated gear 20 extend through only approximately one-fourth of its circumference, and thus the conveyer belts are obviously intermittently driven. The arrangement is such that during the time each crate of bottles is being capped there will be a dwell in movement of the conveyer.

The filling mechanism forms no part of the present invention and need not be described in detail. As seen in Fig. 1 the filling mechanism, designated as a whole 22, is mounted on standards 21 carried by the main frame. The filling devices are made to correspond with the rows of bottles so that there is a filling tube for each bottle. The filling mechanism is operated from the main cam mechanism hereinafter described. This operating mechanism, however, forms

no part of the present invention and need not be described in detail.

Referring now to the manner of sealing or capping the bottles, upon suitable standards 5 50, which may be cast with the main frame are supported parallel tracks 51. Upon these tracks is adapted to ride a traveling carriage designated as a whole 52. This carriage is provided at either side with suitable rollers 53 and is confined in position 10 upon the tracks by means of angle bars 54 secured by bolts 55 to outer edges of the tracks. Within this carriage 52 is mounted to reciprocate a series of cappers which are 15 connected together by a suitable web 57 the outer ends of which slide in guide ways 58 formed in opposite sides of the carriage. Describing now the construction of each of these cappers, and referring more particularly to Fig. 7, within the cylindrical casting 20 56' is mounted a plunger 56 which is adapted to engage the mouth of the bottle. This plunger 56 is axially bored to receive a spring pressed rod 60, and is counter bored 25 as shown at 61 to receive a coiled spring 62 which normally tends to force the rod downwardly. The outer end of the plunger 56 is provided with an enlarged conical bore 30 63 adapted to receive the caps. As the latter are fed from a suitable chute 64 they are held in position within the plungers by means of suitable spring clips 65. To permit of the spring 62 being more readily inserted in position the plunger 56 is of two-part construction as shown. Preferably the 35 plungers 56 are cushioned within the casing by means of a coiled spring 56''. This latter arrangement is preferable in case the mouths of the bottles should not be in exact alignment with each other.

Describing now the mechanism for reciprocating these plungers so as to apply the caps to the bottles, at the upper face of the carriage is suitably journaled a crank shaft 45 66 operatively connected to the web 57 by means of pitmen 67. This crank shaft 66 is provided at one end with a shaft extension 68 upon the outer end of which is idly journaled a belt sheave 70 which is driven 50 from the main shaft 11 by a belt 70'. Upon the shaft extension 68 adjacent to the idler sheave 70 is fixed a collar 69 which is adapted to have clutching engagement with the idler sheave 70. Accordingly the collar 69 55 is axially bored as shown at 72 to receive a clutch pin 71 which is adapted to engage suitable recesses 73 formed in the adjacent face of the sheave 70 and is normally forced therein by means of a spring 71'. The pin 60 71 is normally held out of engagement with the sheave 70 by means of a hook shaped finger 74 pivotally mounted at 74' on the carriage. The finger 74 is provided with an integral extension 77 to which is connected 65 a vertically extending rod 76, the lower end

of which is slidably mounted upon a horizontally extending rod 78. This rod 78 is integrally connected at either end to a parallel rod 79 by means of cross heads 80. The rod 79 is mounted in brackets 81 secured to the 70 ends of the housing 54 in such a manner as to permit the rods to have only a limited rocking movement. To one end of the rod 78 is connected a second vertical rod 81' the lower end of which is pivotally connected 75 to one arm of the bell crank lever 82 mounted upon a support 83 secured to the main frame. To the other arm of the bell crank 82 is connected a spring pressed rod 84 supported in suitable guides 85 as shown more 80 clearly in Fig. 2. The outer end of this spring pressed rod 84 is adapted to engage pins 86 upon one end of a drum 87 hereinafter more particularly described. As the drum 87 rotates one of the pins 86 co- 85 engages the spring pressed rod 84 forcing it inwardly, operating the connecting leverage mechanism and tripping off the finger 74. The pin 71 thereupon springs into one of the 90 recesses 73 and the crank shaft 66 is locked to the constantly rotating sheave 70. After the pin 86 has wiped by the end of the spring pressed rod 84 the latter springs back to normal position operating the connected 95 leverage mechanism and restoring the finger 74 to its normal position. After the shaft 66 has made one complete revolution which is sufficient to apply the caps to the bottles the outer end 75 of the pin 71 will again engage the finger 74 and be automatically 100 drawn from the sheave 70 as shown more clearly in Fig. 6. The various parts just described are of course arranged to operate in properly timed relation.

In the embodiment of the invention herein 105 shown each crate is provided with three rows of bottles and in order to cap each row during the time the crate is held stationary it is necessary to bodily shift the carriage 52 upon its tracks. To this end a cam bail 89 is 110 rigidly connected to either end of the carriage by means of suitable bolts 90, and at its lower end is provided with a cam roller 91 which is adapted to ride within a peculiarly shaped cam groove 92 extending cir- 115 cumerentially of the drum 87. As the drum is rotated the roller travels along the path of the cam groove 92 and is shifted in an endwise direction upon the periphery of the drum. The arrangement is such that the 120 carriage will be shifted step by step to the successive rows of bottles there being a slight dwell in movement of the carriage after each step in order to allow of the plungers being reciprocated downwardly and 125 the caps accurately applied to the bottles. After the carriage has been shifted to the last row of bottles there will be a somewhat longer dwell in movement of the carriage in order to permit a second crate to be moved 130

up into position for capping. The cam groove is of course so shaped as to perform the above named functions. It is to be noted that in the first crate the forward row of bottles will be first capped and then the second and third rows successively, while in the next crate the order will be reversed and the rear row capped first.

Inasmuch as the drum 87 would not operate in properly timed relation if it were connected directly to the counter shaft 18 it is driven through a suitable train of gears. To this end the forward end of the drum is provided with a relatively large spur gear 94 which meshes with a relatively wide gear 95 journaled upon a stub shaft 96 which is supported between suitable brackets 97 fixed to the main frame. This gear 95 in turn meshes with a similar gear 98 journaled upon a stub shaft 99 fixed to an extension of one of the brackets 97. The gear 98 engages a similar gear 99 mounted upon the collar 100 keyed to the counter shaft 18.

It might be here noted that the driving shaft 11 is provided with a rigid pulley sheave 101 and a similar idler sheave 102. This permits of the driving bolt being shifted to the idler sheave 102 when it is desired to stop the machine.

While I have herein shown the preferred embodiment of my invention it is of course apparent that it may be varied in numerous details of construction without in any manner departing from its spirit thereof.

I claim as my invention:

1. In a bottle handling apparatus, the combination with a main frame, of a conveyer mechanism for moving bottle handling crates along said main frame, bottle handling crates actuated by said conveyer wherein the bottles are arranged in transversely extending rows, mechanism for intermittently driving said conveyers and means for automatically sealing the bottles while within said holders during a dwell in movement of the conveyer comprising a traveling carriage mounted upon said main frame, sealing mechanism mounted to reciprocate vertically within said carriage, and operatively interconnected mechanism for alternately actuating said sealing mechanism and for shifting said carriage.

2. In a bottle handling apparatus, the combination with a main frame, of a conveyer mechanism, a bottle holding crate actuated by said conveyer mechanism and

wherein the bottles are arranged in transversely extending rows, mechanism for simultaneously sealing a row of bottles in said crate mechanism for shifting said sealing mechanism to seal the successive rows of bottles within the crate and mechanism for automatically operating said parts in properly timed relation.

3. In a bottle handling apparatus, the combination with a suitable main frame, of an intermittently actuated conveyer mechanism, a bottle holder actuated by said conveyer mechanism and in which the bottles are arranged in transversely extending rows, means for actuating the conveyer mechanism, mechanism for simultaneously sealing a row of bottles while within said holder and cam controlled mechanism for shifting said sealing mechanism to the successive rows of bottles within said holder.

4. In a bottle handling apparatus, the combination with a main frame, of means for supporting the bottle holder upon said main frame wherein the bottles are arranged in transversely extending rows, mechanism for sealing a row of bottles within said holder, mechanism for bodily shifting said sealing mechanism to successively seal the succeeding rows of bottles and means for automatically operating said parts in properly timed relation.

5. In a bottle handling apparatus, the combination with a main frame, of an intermittently driven conveyer, a bottle holder wherein the bottles are arranged in transversely extending rows actuated by said conveyer, sealing mechanism, mechanism for shifting said sealing mechanism to successively seal the rows of bottles within the holder during a dwell in movement of the conveyer, and means for operating said various parts in properly timed relation.

6. In a bottle handling apparatus, the combination with a main frame, of an intermittently driven conveyer, a bottle holder actuated by said conveyer, sealing mechanism, means for shifting said sealing mechanism to successively seal the bottles within the holder during a dwell in movement of the conveyer, and means for operating said parts in properly timed relation.

HENRY J. CHILTON.

Witnesses:

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F. G. BELKNAP.