

No. 872,079.

PATENTED NOV. 26, 1907.

H. A. OLSSON.
FILLING MACHINE FOR BOTTLE CAPS.

APPLICATION FILED JUNE 6, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

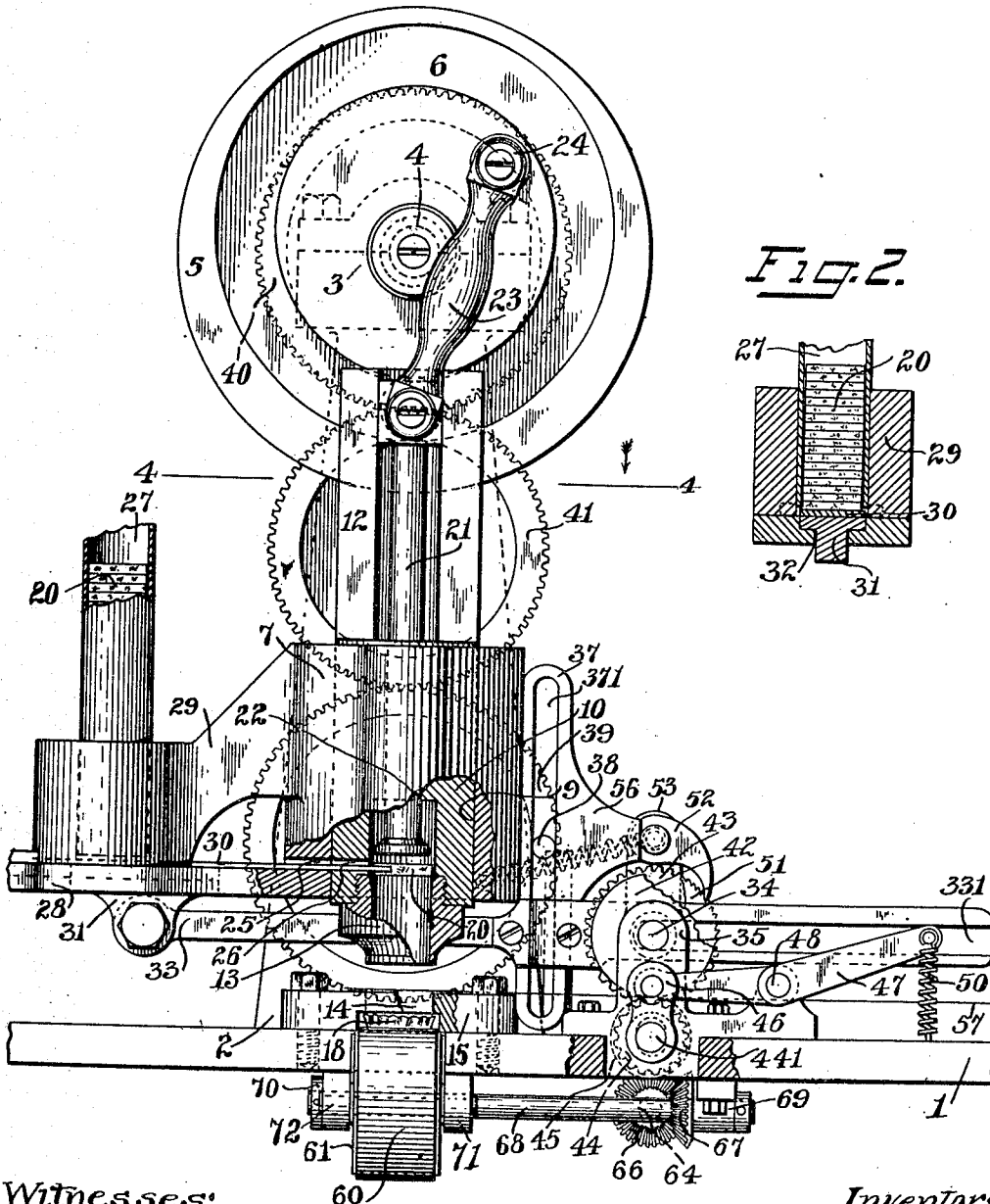
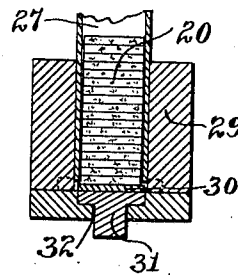


Fig. 2.



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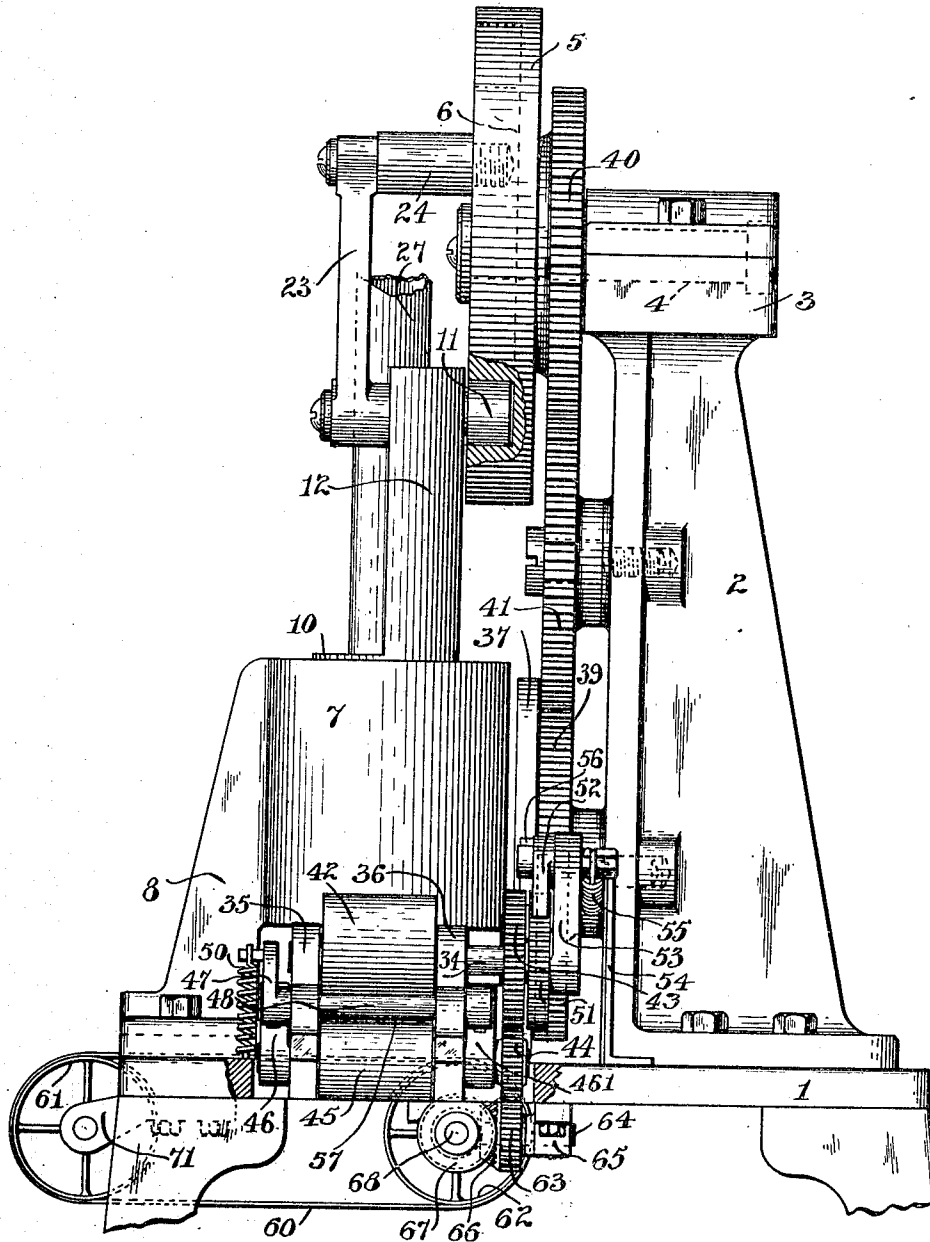
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3 SHEETS—SHEET 2.

Fig. 3.



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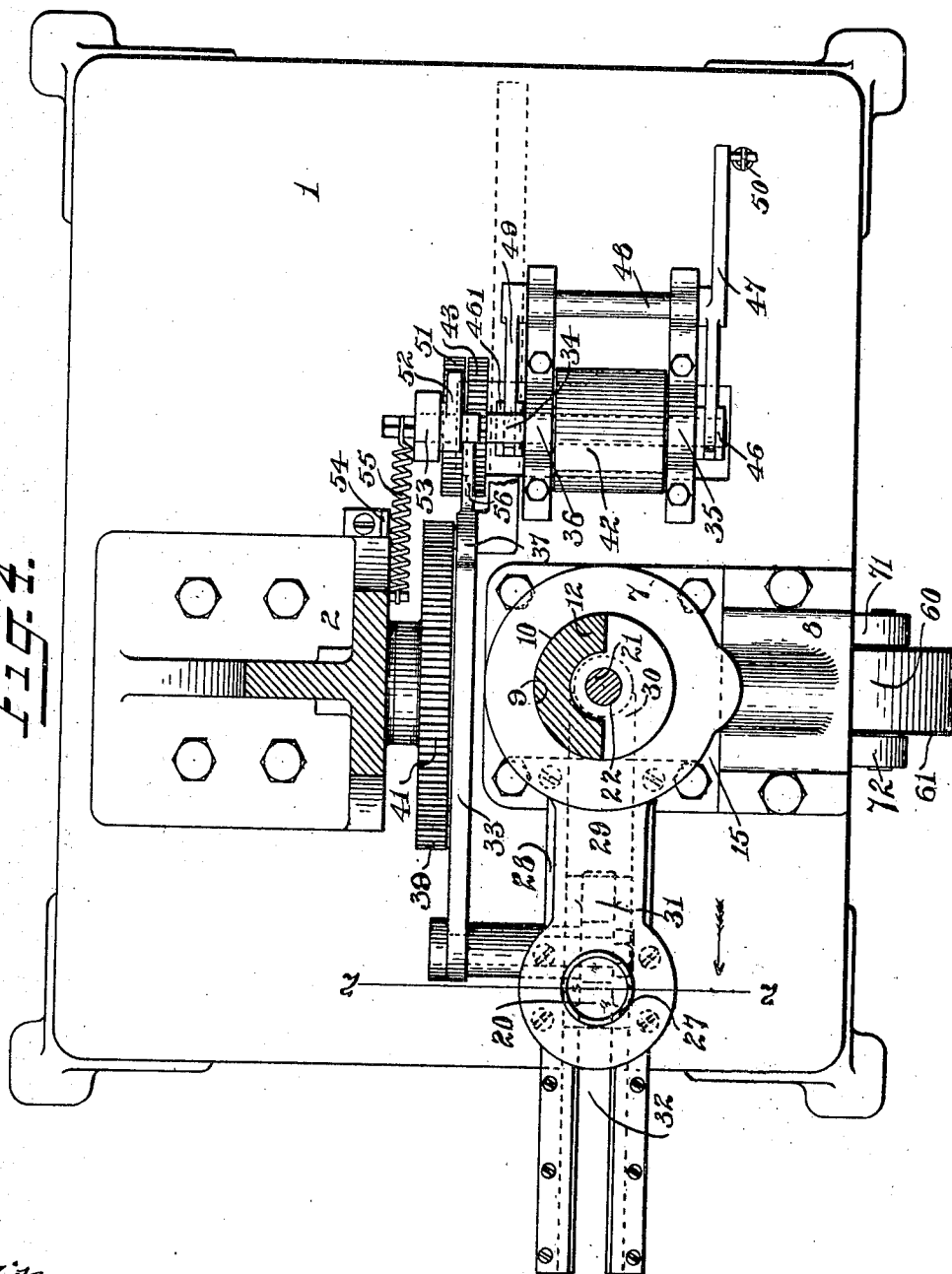
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3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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FILLING-MACHINE FOR BOTTLE-CAPS.

No. 872,079.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed June 6, 1907. Serial No. 377,550.

To all whom it may concern:

Be it known that I, HENRY A. OLSSON, a citizen of the United States, residing in Brooklyn, New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Filling-Machines for Bottle-Caps, of which the following is a specification.

This invention has for its object to provide improved means for inserting a disk of treated paper or the like, in a bottle cap, such as the crimped bottle cap, and also inserting a stopper disk, such as a cork disk, on top of the paper disk, and forcing both disks down into the cap; to form a gas tight closure for bottles, especially carbonated and effervescing liquids.

In the drawings is illustrated one embodiment of my invention, in which

Figure 1 is a front elevation partly in section. Fig. 2 shows a section on line 2—2 indicated in Fig. 4. Fig. 3 is an end elevation. Fig. 4 is a section on line 4—4 shown in Fig. 1. Fig. 5 shows the cap, collet and cork disk. The invention broadly stated comprises a die block supported above a table, along which the caps are fed; an annular die punch for cutting paper disks from a strip, which punch has its bore enlarged at the upper part or top; into which bore compressible disks or stoppers of cork or the like are fed; and a plunger that forces the cork disks down through the bore of the punch, reducing their diameter, and on top of the paper disk, that will usually lodge in the die block aperture; and both disks are forced down the die block aperture into the cap positioned on the table.

Heretofore, the paper disks or collets were cut by a die plate and punch and forced down into the crown caps; then the caps were advanced or shifted along the table under a chute, and the cork disks forced down through this chute by a plunger into the caps with the collets already placed therein by the cutting punch. Thus, two separate devices, and two sequential operations were necessary. With the present invention, the paper collets are cut by a tubular die punch, working into a die plate aperture, below which the crown cap is fed; and the cork disks are fed into the tubular die punch that cuts the collets, and as soon as the collets are cut by the punch, a plunger working in the tubular punch, is brought down and forces the cork disks down through the tubular punch on top of the collets, and both the collet and

disk are forced down into the cap; without shifting the cap for a second operation; and in a very rapid sequence, effecting a great saving of time in the operation. And by such an organization, the cork disk following the collet down into the cap, it is absolutely certain that the collet will be stripped from its cutting punch, and that each cap will have a collet located under the cork therein.

In the construction illustrated in the drawings, on a table 1, is mounted a support 2, having a bearing 3, in which rotates a shaft 4, carrying a cam disk 5, provided with a cam slot 6. A block 7, is supported above the table by a bracket 8, and has a vertical bore 9, in which slides a tubular punch member 10. A roller 11, on the upper extension 12, of the punch member rides in the cam slot 6, of the disk 5; by which the punch is reciprocated. The punch has a reduced annular cutter 13, at its lower end, that enters a short distance into the opening 14, in a die plate 15, fast on the table. A strip of thin material, such as paper treated with resin, is fed at intervals between the punch and die plate and a disk or collet 17 is cut thereby when the punch descends. A crimped cap 18, is fed along the table by suitable means, beneath the aperture in the die plate 14, and the collet 17 if it should drop would fall into the cap as soon as cut, but is likely to adhere to the wall of the die plate bore, by the friction of the resin thereon.

The cork disks 20, are fed by suitable means into the tubular punch member 10, and are forced down through it by a suitable plunger 21, sliding in the bore 22 of the punch. A connecting rod 23, is pivoted to the cam disk 5 at 24, and also to the plunger 21 by which means the plunger is reciprocated. The punch member 10, and the plunger 21, are timed so that the punch is first moved down to cut the collet, and then the cork disk that is fed into the tubular punch, is forced down through the punch by the plunger 21; and the latter moves down far enough to force the disk and collet down through the die plate and into the cap, and both are driven hard into the cap, at one operation. Thereupon, both the punch and the plunger are moved up to their former position, to permit a new cap to be fed under the die plate, and the strip of paper to be advanced to have another collet cut therefrom; and also for another cork disk to be fed into the tubular punch.

Since the cork disk is usually of the same diameter as the collet, the bore of the tubular punch at its lower cutting end will be of smaller diameter than the collet, according to the thickness of the punch wall. If this wall be one thirtysecond of an inch thick, the punch bore will be one sixteenth of an inch smaller than the collet cut by the punch. But as the cork disk is compressible, it can be readily squeezed down the punch bore by the plunger. A side opening 25 is made in the block member 7, and a side opening 26 is provided in the punch member 10, comes opposite the slot 25 when the punch is raised. The cork disks 20, are placed in a hopper 27, mounted on a plate 28, both members, being carried by an arm 29 from the block 7. The lowermost cork in the hopper is pushed across the plate 28, that is even with the slot 25, into the tubular punch opening. At this portion the bore of the punch is slightly enlarged to admit the corks; and the bore is thereupon converged to its lower cutting end; and as the plunger 21 is brought down to force the cork disk through the punch, the disk will be compressed in diameter, but as soon as it emerges from the punch it will expand to its former size. The punch cutter that cuts the collet of paper, is made to extend but a very short distance into the die plate bore; and the cut collet will remain in the bore of the die plate adjacent the end of the punch. But the cork disk being forced down through the punch by the plunger, will meet the collet in the die plate; and the continued advance of the plunger will drive both the collet and the cork disk down through the die plate, and into the cap positioned below the die plate opening.

The cork disks are fed from the pile in the hopper 27, along the plate 28 into the punch, by a slide 30, having a lug 31 projecting down through a slot 32, in the plate 28, and fast to an actuator bar 33. This bar has a slot 331 at its other end that rides on a spindle 34 rotatable in uprights 35 and 36, on the table. This bar is provided with a transverse slotted bar 37 in whose slot 371 rides a roller 38 carried by a gear 39, rotatable on bracket 2. This gear is driven from gear 40 on shaft 4, through a gear 41. On rotation of gear 39, the roller will cause the slide 30 to reciprocate, and each time its end will engage the lowermost cork disk in the hopper, and shift it into the punch 10 under the plunger; such movement being properly timed relative thereto.

Means are provided for feeding a strip of paper intermittently between the punch and die plate, which are operated from the bar 33. The spindle 34 has a roller 42, fast thereon, and a gear 43 that meshes with a gear 44 fast on a roller 45, rotatably carried by links 46, 461. A lever 47 is fast to a

spindle 48, and carries link 46, the other link being carried by an arm 49, fast to spindle 48. A spring 50 between lever 47 and the table pulls the lever downward and presses the roller 45 up against the roller 42; these two rollers being rotated at the same surface speed by their engaging gears. Spindle 34 has a ratchet wheel 51 fast thereon, and a pawl 52 is pivoted on an arm 53, loose on spindle 34, and engages the ratchet wheel 51. The pawl arm is pressed against a post 54, on the table; by a spring 55, between the arm and the bracket 2. An abutment 56, on the arm 37 of the sliding bar 33, strikes the pawl at the latter part of the stroke of the bar, and causes the pawl 52 to engage the ratchet wheel 51 and rotate the two rollers 42 and 45, thus advancing the paper strip 57 on top of the die plate under the punch. On the return of the bar, the spring 55 will return the pawl arm, for another advancing stroke when the bar returns, to again feed the paper.

The caps are fed along the table under the die plate by an endless belt 60, carried by rollers 61 and 62. The gear 44 on the spindle 441 of the lower roller 45, meshes with a gear 63, on a spindle 64 rotatably carried by a bracket 65 under the table. A bevel gear 66 is fast to gear 63 and meshes with a bevel gear 67 fast to a spindle 68 carried in brackets 69, 70, under the table. Spindle 68 carries roller 62; by which means the belt is intermittently advanced to bring another cap under the die plate aperture at each advance of the paper strip. Roller 61 is supported by brackets 71 and 72, fast under the table, as best shown in Fig. 4.

Having thus described my invention, what I claim is:—

1. An apertured die block, an annular die punch coöperating with the die block to cut a collet, means to feed a strip intermittently between the die members to have a collet cut therefrom, a support below the die block aperture, means to feed caps intermittently under the die block aperture to receive the respective collets, means for feeding disks into the annular punch, and a plunger operable through the punch bore and through the die block aperture to force a collet and a disk down into each cap positioned below the die block aperture.

2. An apertured die block, an annular die punch coöperating with the die block to cut a collet, means to feed a strip intermittently between the die members to have a collet cut therefrom, a support below the die block aperture, means to feed caps intermittently under the die block aperture to receive the respective collets, means for feeding disks into the punch bore, a plunger operable through the punch bore and through the die block aperture to force a collet and a disk down into each cap positioned below the die block aperture, the punch having its bore

converging downward to receive therein a compressible disk to be forced down there-through by the plunger.

3. An apertured die block, an annular die punch coöperating with the die block to cut a collet, means to feed a strip intermittently between the die members to have a collet cut therefrom, a support below the die block aperture, means to feed caps intermittently under the die block aperture to receive the respective collets, means for feeding disks into the punch bore, a plunger operable through the punch bore and through the die block aperture to force a collet and a disk down into each cap positioned below the die block aperture, means to reciprocate the punch, and means to drive the plunger down through the punch in its lowered position to force the disk and collet down into the positioned cap.

4. An apertured die block, an annular die punch coöperating with the die block to cut a collet, means to feed a strip intermittently between the die members to have a collet cut therefrom, a support below the die block aperture, means to feed caps intermittently under the die block aperture to receive the respective collets, means for feeding disks into the punch bore, a plunger operable through the punch bore and through the die block aperture to force a collet and a disk down into each cap positioned below the die aperture, the punch having its bore converging downwardly to receive therein a compressible disk to be forced down there-through by the plunger, means to reciprocate the punch, and means to drive the

plunger down through the punch to force the compressible disk through the punch on to the cut collet in the die block aperture and to then drive both stopper and disk down into the positioned cap.

5. An apertured die block, an annular die punch coöperating with the die block to cut a collet, means to feed a strip intermittently between the die members to have a collet cut therefrom, a support below the die block aperture, means to feed caps intermittently under the die block aperture to receive the respective collets, means for feeding disks into the punch bore, a plunger operable through the punch bore and through the die block aperture to force a collet and a disk down into each cap positioned below the die aperture, the punch comprising an apertured block having an annular cutting rib at the lower end of the bore which fits into the die block aperture to cut the collet, the block having the bore diverging upward to receive a disk as large as the collet cut by the punch.

6. An apertured die block, a tubular die punch having a lateral opening to receive a disk into its bore, means for operating the punch to cut a collet, a plunger operable through the bore of the punch, and means for operating the plunger to force a disk fed into the punch opening down through the punch on to the cut collet and to drive both collet and disk down into a cap positioned below the die block.

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Witnesses:

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