

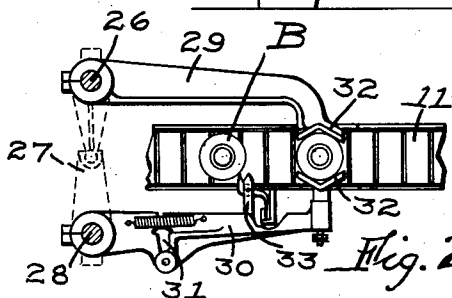
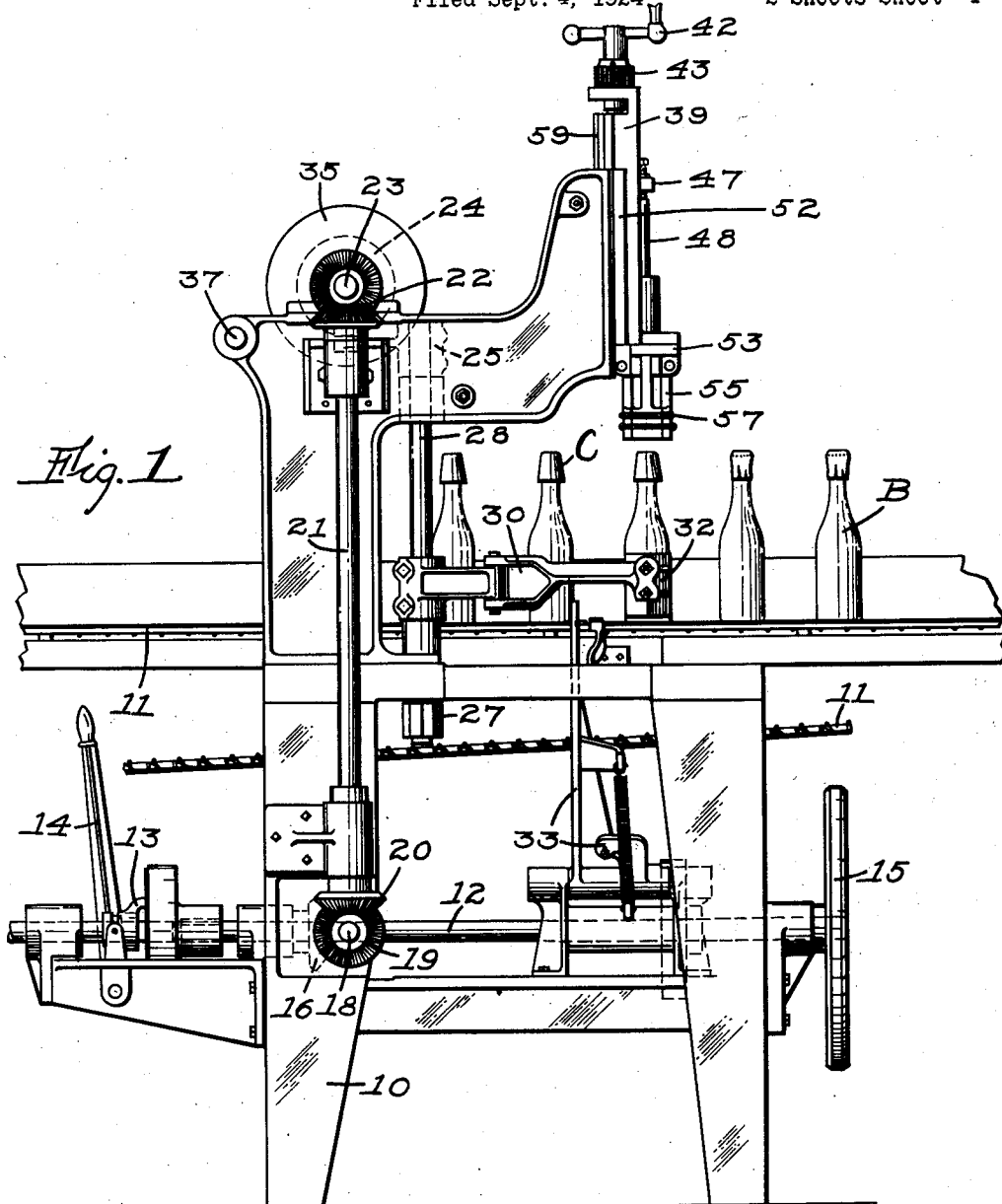
June 5, 1928.

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C. H. OSLUND ET AL
MACHINE FOR APPLYING CAPSULE

Filed Sept. 4, 1924

2 Sheets-Sheet 1



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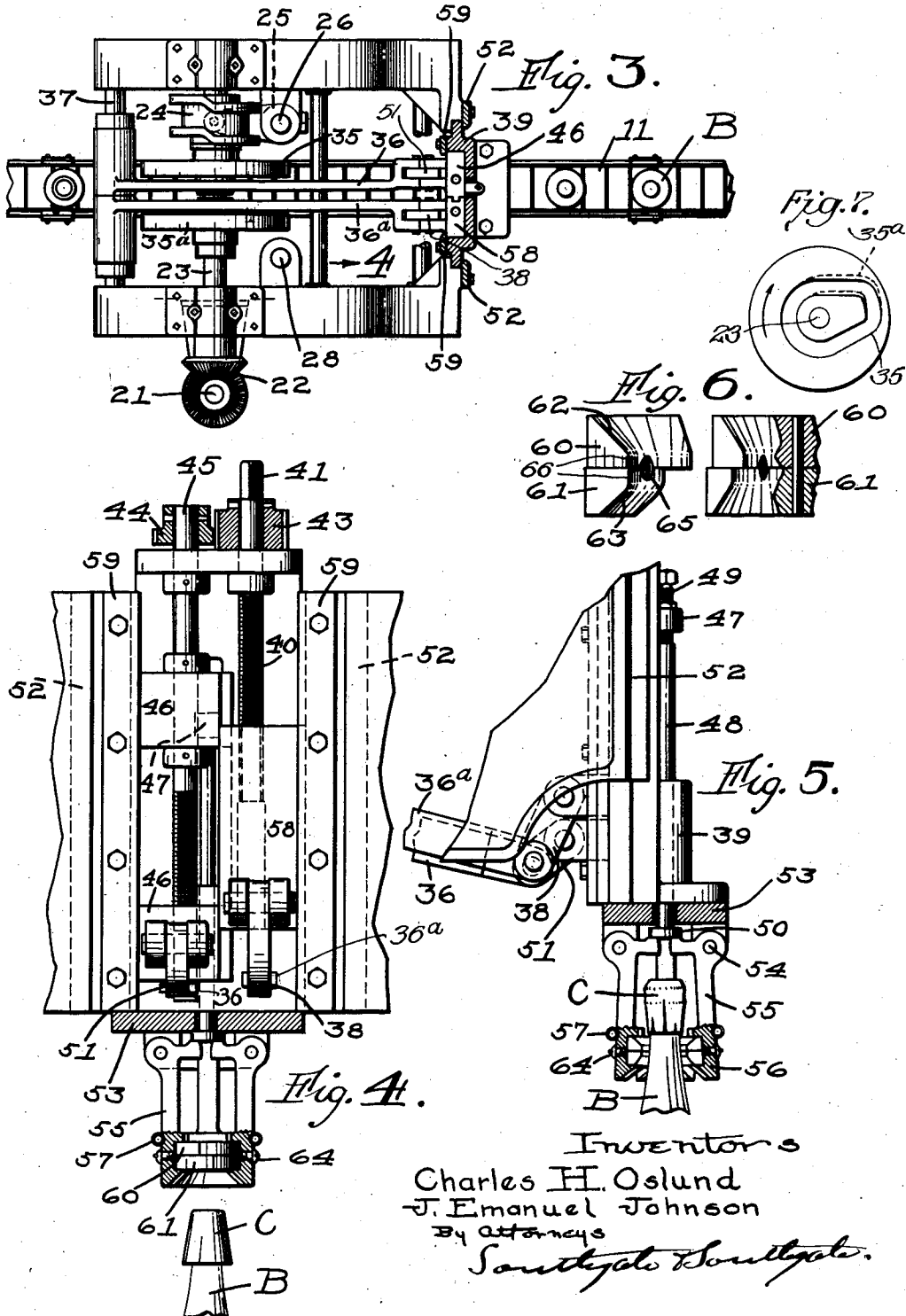
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MACHINE FOR APPLYING CAPSULES

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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE.

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MACHINE FOR APPLYING CAPSULES.

Application filed September 4, 1924. Serial No. 735,895.

This invention relates to the application of capsules to bottles and the like. These capsules are cup-shaped objects of thin lead or other soft metal and are applied to the tops of bottles and other containers after the bottles are sealed, usually by means of a cork. They are applied ordinarily by hand and materially increase the cost of the goods.

The principal object of this invention is to provide an automatic machine for smoothing down these capsules around the neck of the bottle or other containers so as to leave them in proper condition for exhibition, shipment and sale. The capsules are placed on the bottles by hand and the bottles are fed to the machine which performs the operation of smoothing them down around the end of the capsule or around the neck so that they are left in a smooth condition at the bottom and pressed down into contact with the neck of the bottle. The invention also involves the provision of a multiple part die or smoothing device and mechanism for bringing it down in position for pressing it against the capsule all around and forcing it down past the bottom of the capsule to leave it in a condition before mentioned. It also involves means for yieldingly holding the dies up against the capsule and for releasing them and holding them out, away from the bottle at the bottom of the stroke and keeping them in that condition until the dies are raised above the top of the bottle which is then delivered in condition for sale. Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a side view of a machine constructed in accordance with this invention;

Fig. 2 is a plan of a portion of the machine for holding the bottle and feeding it;

Fig. 3 is a plan of the top of the machine, above the parts shown in Fig. 2, with the guide and the dies in section;

Fig. 4 is an end view, looking in the direction of the arrow 4 in Fig. 3 with the dies and certain other parts in section;

Fig. 5 is a side view of the same with the same parts in section, showing the operating mechanism in elevation;

Fig. 6 is a fragmentary view of two of the dies, and

Fig. 7 is a side view showing two cams.

We have shown the machine as comprising a frame 10, having thereon an endless chain conveyor 11, operated in any desired way for carrying bottles or other containers through the machine.

On the lower part of the frame is a main shaft 12 which can be connected with the power by clutch 13, operated by lever 14. It can be operated by hand-wheel 15, keyed to it also when not in connection with the power so that it can be turned to bring the parts to any desired position. On this shaft 12, is a gear 16, meshing with a gear (not shown) on a transverse horizontal shaft 18. On this shaft 18 there is another gear 19, meshing with a gear 20 on the bottom of a vertical shaft 21. The latter by similar gearing 22, drives a cam shaft 23 at the top of the frame.

On the shaft 23 is a cam 24, which by means of an arm 25 operates a vertical shaft 26 on which the arm is fixed. This shaft, through a toggle 27, operates a similar shaft 28. On these two shafts are arms 29 and 30, the latter having a spring joint 31 made to yield. Both are provided with grippers 32 for engaging the opposite sides of a bottle and holding it in position for the machine to operate on, as is indicated in Figures 1 and 2, while the bottles are in the conveyor.

We have shown conventionally an automatic device 33 common in labeling machines for preventing the next bottle from being fed along before it is time to apply the capsule to it. By this means the bottles are adapted to be placed on the conveyor by hand or in any other way with the capsules C, thereon, and fed automatically up to operative position, where they are held while the machine operates, although the conveyor may be moving continually.

On the cam shaft 23 there are also two other cams 35 and 35^a, having on their faces cam grooves, for operating rolls on a pair of arms 36 36^a, which are pivoted freely on a cross shaft 37. These two arms 36 36^a are not exactly alike nor are the cams 35 and 35^a the latter being designed to operate the arms in the order that will be described below.

One of the arms, 36^a, has at the end a link 38 connected with a head 58. This head 58 can be adjusted up and down in the head 39 by a vertical screw 40 having a square end 41, for the reception of a handle 42. The

head 39 moves up and down in a guide form in the frame and is held in by means of vertical pieces 52 which are removable. The heads 58 and 39 being connected together by screw 40 move as one unit. Fixed on this screw 40 is a gear 43 meshing with a gear 44 on another screw 45 so that they can be adjusted together. The screw 45 is connected with a third head 46 which is operated by a link 51 on the arm 36. The heads 46 and 58 are tongued together and are held in head 39 by vertical pieces 59. The head 46 has a lug 47 projecting horizontally through a slot in head 39 and contains an adjusting screw 49 which engages a rod 48. This rod 48 floats in a bearing in head 39 and constitutes a plunger having a head 50 below resting on a series of bell cranks 55 for a purpose to be described.

On the bottom of the head 39 is a plate 53 which moves up and down with the head and has a series of pins 54, preferably four. On each pin is pivoted a bell crank 55 on the bottom of which there is a die holder 56. These die holders are arranged around a center and held in place by a coiled spring 57, arranged around them to force them inwardly toward the center with a certain degree of yielding pressure. When they are forced down they will hug up against the bottle and capsule.

In each of the die holders there are two dies 60 and 61. The upper die 60 has a slanting or conical surface 62 and the lower die a similar but opposite conical surface 63. Between these conical surfaces each die has a concave cylindrical surface 66 for engaging the top of the capsule, pressing it against the bottle, and leaving it smooth. The dies are held in place by screws 64, carried by the die holders and passing through semi-cylindrical passages 65, which are screw threaded to receive the screws. The dies above and below do not exactly register but are relatively displaced circumferentially. In other words, they are arranged to break joints as indicated in Fig. 6, to avoid creasing the capsules between the dies.

In the operation of the machine bottles B with the capsules C placed on top, as shown at the bottom of Fig. 4 and also Fig. 1 are put on the conveyor 3. The conveyor moves along until grippers 32 engage a bottle to hold it in position. These grippers are so timed relative to the rest of the machine that when a bottle has been gripped as stated, the cams 35 and 35^a which operate the links 38 and 51 will cause the links to depress the heads 39 and 46 in the same relative position to each other, thus carrying down the dies with them. The smooth cylindrical surfaces of the dies act to smooth down the capsule and leave it in the shape shown in Fig. 5. At this time the cam 35 connected to link 51 depresses the head 46

a little beyond the head 39 which has reached its lowermost position causing the screw 49 to engage the rod 48. This brings down the plunger 50 from the position shown in Fig. 4 to that in Fig. 5 where it acts to spread the bell cranks 55 and swing all of the dies outwardly as shown in Fig. 5, while the cams 35 and 35^a raise the links 38 and 51 to raise the heads 39 and 46 together causing the die holders 56 to swing in. The parts are now in the position again shown in Fig. 4, ready to act on the next bottle when this one has been moved along and the next one brought in the position for operation.

The machine can be thrown out at any time by the lever 14 and the parts can be adjusted by operation of the hand wheel 15 so as to bring the head up or down as may be desired. The adjustments are provided for through the square end 41. The screw 49 is for the purpose of adjusting the plunger 50 and the dies to the proper position relative to the other parts. In this way these capsules can be smoothed down accurately and uniformly so that they will all be alike with a great saving of time and labor.

We do not claim herein the means for regulating the feed of the bottles or the conveyor as these parts are well known in bottle labeling machines.

Although we have illustrated and described only a single form of the invention, we are aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention. Therefore we do not wish to be limited to all the details of construction herein shown and described but what we do claim is:—

1. In a machine for finishing capsules on bottles or the like, the combination with means for supporting a bottle with a capsule thereon in a stationary position, a reciprocable head, a plurality of pivoted die-holders movable down with the head around the top of the bottle and capsule, means for spreading said die holders from each other, a series of smoothing dies, carried by the die-holders for engaging the capsule, and means for moving the head to a position to bring the dies down below the head and around the neck of the bottle, said dies each having a slanting conical surface for the purpose described.

2. In a machine for smoothing capsules on bottles or the like, the combination with means for supporting a bottle with a capsule thereon in a stationary position, a vertically reciprocable head, a plurality of die-holders, movable down with the head around the top of the bottle and capsule, and a series of smoothing dies, carried by the die-holders for engaging the capsule and smoothing it down around the neck of

the bottle, each die-holder having dies that are off set with respect to each other and having passages through which the two dies can be secured to the die-holder by a screw.

5 3. In a machine for smoothing capsules on bottles or the like, the combination with means for supporting a bottle with a capsule thereon in stationary position, a reciprocable head, a plurality of pivoted die-
10 holders movable down with the head around the top of the bottle and capsule, means for spreading said die holders from each other and a series of smoothing dies carried by the die-holders, the dies in each die-holder
15 having an upper and a lower flaring surface at opposite ends and having a cylindrical surface between them of a length sufficient for performing the smoothing operation down on the neck of the bottle.

20 4. In a machine for applying soft metal capsules to bottles and the like, the combination of a reciprocal head, a series of bell-cranks pivoted on the bottom of the head, each bell-crank having a die-holder on the
25 bottom, and machine operated means for spreading said cranks apart from each other, a series of dies in the die-holders, having smooth surfaces for engaging the capsules and smoothing them down on the
30 bottle, and yielding means for holding the die-holders inwardly toward each other and for applying pressure to them while they are in operation.

5. In a machine for applying soft metal
35 capsules to bottles and the like, the combination of a reciprocable head, with a series of dies carried thereby having smooth surfaces for engaging the capsules and smooth-

ing them down on the bottles, yielding means for holding the die-holders inward
40 toward each other under pressure while they are in operation, a plunger movable with the head, means for bringing the plunger down at the end of the downward stroke of the head, and means actuated by
45 the plunger to separate the dies.

6. In a machine for applying soft metal capsules to bottles and the like, the combination of a reciprocable head, with a series of bell-cranks thereon each having a die on
50 the bottom thereof for engaging the capsules and smoothing them down on the bottle, yielding means for holding the dies inward toward each other, a plunger movable with the head, means for bringing the
55 plunger movable down on the bell-cranks at the end of the downward stroke of the head to separate the dies, and means for thereafter raising the plunger to allow the bell-cranks to leave the dies in position for the
60 next operation.

7. In a machine for applying capsules, the combination of a pair of cams, means for rotating the cams, a pair of arms operated by the cams, a vertically movable head
65 connected with one of said arms, dies movable with the head and with respect to each other for performing a smoothing operation on the capsule, and a plunger movable with the head and connected with the other arm
70 for controlling the relative locations of said dies.

In testimony whereof we have hereunto affixed our signatures.

CHARLES H. OSLUND.

JOHN EMANUEL JOHNSON.