

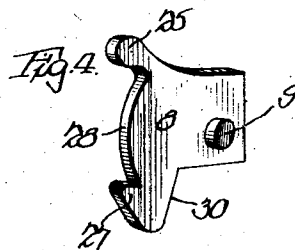
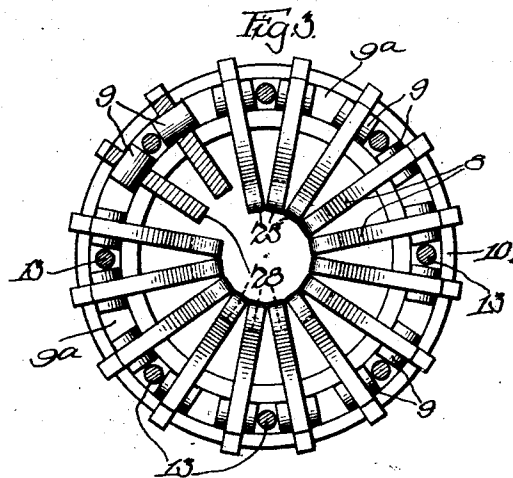
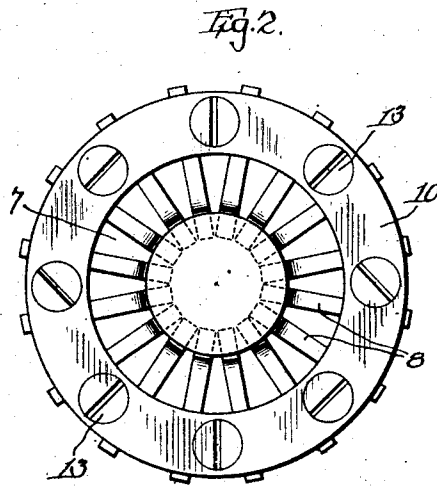
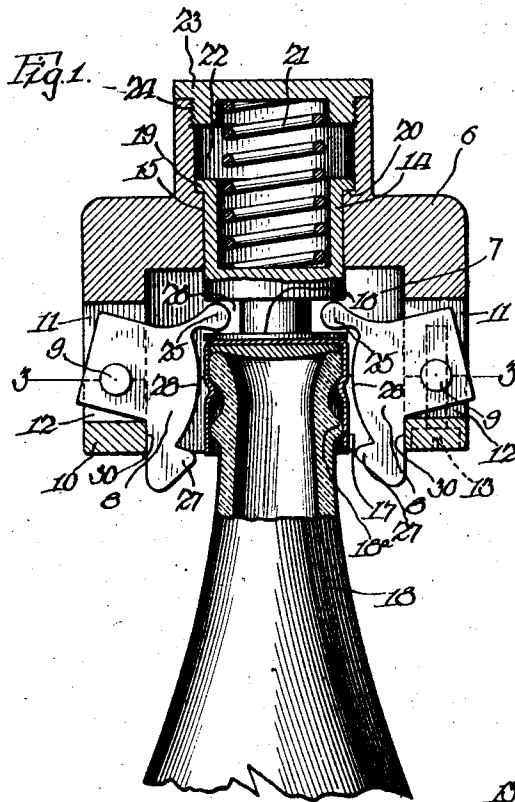
Aug. 23, 1927.

1,640,332

A. C. SPAHN

DEVICE FOR APPLYING CAPS TO BOTTLES

Filed Sept. 20, 1924



Inventor:
August C. Spahn
By Fred Gulack
his Atty.

Patented Aug. 23, 1927.

1,640,332

UNITED STATES PATENT OFFICE.

AUGUST C. SPAHN, OF EVANSVILLE, INDIANA, ASSIGNOR TO BERNARDIN BOTTLE CAP COMPANY, OF EVANSVILLE, INDIANA, A CORPORATION OF INDIANA.

DEVICE FOR APPLYING CAPS TO BOTTLES.

Application filed September 20, 1924. Serial No. 738,753.

The invention relates to devices for applying caps to bottles.

The object of the invention is to provide a device which is simple in construction, efficient in operation and which is provided with means for centralizing the cap and bottle between an annular series of cap-bending members so as to insure the proper disposition of the bottle to effect uniform indenting of all portions of the lower margin of the skirt of the cap. Other objects will appear from the detailed description of the invention.

The invention consists in the several novel features hereinafter set forth and more particularly defined by the claims at the conclusion hereof.

In the drawing: Fig. 1 is a vertical section of a device embodying the invention. Fig. 2 is an inverted plan. Fig. 3 is a section taken on line 3—3 of Fig. 1, all but two of the cap bending members being shown in elevation. Fig. 4 is a detail perspective of one of the cap bending members.

The invention is exemplified in a device comprising a head or holder 6 which may be suitably supported in any manner well understood in the art. A cylindrical chamber 7 is formed in the lower portion of this head and a series of cap-bending members 8 are pivotally mounted in the head. Each of these cap-bending members is preferably formed of flat metal. A pivot-stud 9 is inserted through and pressed tightly into a hole in each of said members to pivotally connect the member to the head. To permit the insertion and removal of these members, the head is provided with a removable section or ring 10. The faces of the head and ring have faces which abut against each other and are positioned substantially in the plane of the axes of the studs 9. Stud 9 are pivoted in an annular groove 9^a which is formed in the abutting faces of the head and ring. The body of head 6 is vertically slotted, as at 11, and the ring 10 is correspondingly slotted at 12 to form vertically extending slots, in which the members 8 are confined. Screws 13 extend through the ring 10 and into the body of head 6 between the pivot-studs 9 to removably secure the ring to the head. A plunger 14 is slidably mounted in a cylindrical guideway 15 in head 6 and the lower face 16 of the plunger is adapted to be engaged by the closure-cap 17

on the bottle 18 to force the cap into firm contact with the mouth of the bottle and to operate the bending members.

The device is adapted to be operated by relative movement between the bottle and the head, which may be imparted to the bottle or to the head in any suitable manner, as well understood in the art. An annular shoulder 19 on the upper end of plunger 14 is adapted to engage a shoulder 20 in the head to limit the downward movement of the plunger in the head. A spring 21 is applied to yieldingly and forcibly hold the plunger in its lowermost position. Said spring is confined in a cylindrical pocket 22 in the upper portion of the plunger and in a cap 23, which is removably secured to the head by a screw-thread 24. This construction readily permits springs of different tensions to be substituted for one another according to the requirements of the work to be performed by the device.

Each cap-engaging member comprises an integral arm 25, extending inwardly and upwardly therefrom, having a rounded terminal extending into an annular groove 26 in the plunger, an inwardly extending finger 27 at its lower end adapted, when swung inwardly, to engage the lower margin of the skirt of cap 17 to bend it inwardly under the rib 18^a on the bottle neck. Between arm 25 and finger 27, the inner edge of each member 8 is formed with a curved guiding portion 28, which is struck on a curve substantially concentric with the axis of pivot-stud 9. These curved portions are adapted to guide the bottle to centrally position it under the plunger and are adapted to hold the bottle and cap so positioned during the operation of the cap-bending members, so that all of the fingers 27 will bend inwardly a substantially uniform distance to the lower margin of the skirt of the cap and thus insure an effective lock between the cap and the bottle. This guiding feature of the fingers is particularly advantageous in connection with applying closure caps of the type exhibited in an application filed by me June 14, 1924, Serial No. 719,960. Each member 8 is provided with an edge or abutment 30, which is adapted to engage the inner periphery of ring 10 to limit the pivotal movement of the members in one direction.

In operation, relative movement of a bot-

6 will cause the plunger to uniformly swing all of the members 8 so that the fingers 27 will bend or crimp the lower margin of the skirt of the cap under the rib 18^a on the bottle. During this operation, the cap and bottle will be retained in their centralized position in the head by the curved guide-surfaces 28.

10 The invention exemplifies a device for applying closure caps to bottles, which is simple in construction and efficient in operation. By providing the members 8 with curved guiding surfaces 28, the bottle and cap will be properly positioned relatively to the head by forming the members 8 of flat metal and pressing studs into them; also a construction is provided which makes it possible to use stamped metal members, and which is adapted to use a circular groove in which the pivot-studs will be held so as to permit free movement of the members.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a device for applying closure caps to bottles, the combination of a head provided with a chamber therein, a series of cap bending members pivoted in the head and provided with arms and bending fingers, and a plunger movable in the head and adapted to be engaged by the bottle cap and to which the arms are operatively connected,

said members being provided at their inner margins with curved guide-surfaces for the bottle and cap which extend between the arms and the fingers and are disposed beneath the plunger.

2. In a device for applying closure caps to bottles, the combination of a head provided with a chamber therein, a series of cap bending members pivoted in the head and provided with arms and bending fingers, and a plunger movable in the head and adapted to be engaged by the bottle cap and to which the arms are operatively connected, said members being provided at their inner margins with guide surfaces for the bottle and cap which extend between the arms and the fingers and are disposed beneath said plunger, the guide surface on each member being curved on an arc which is substantially concentric with the axis of the member.

3. In a device for applying closure caps to bottles, the combination of a head provided with a chamber therein, a ring removably secured to said head, said head and ring having longitudinally extending slots and an annular groove formed therein adjacent their abutting faces, cap bending members fitting in and guided by said slots, said members being formed of substantially flat metal and provided with arms and bending fingers, relatively short pivot studs for the members disposed in said groove, and a plunger movable in the head and operatively connected to said arms.

Signed at Evansville, Indiana, this 17th day of September, 1924.

AUGUST C. SPAHN.