F. J. HEYBACH.

CAPPING DEVICE.

APPLICATION FILED MAR. 31, 1910.

1,111,581. Patented Sept. 22, 1914.

Fig. 1.

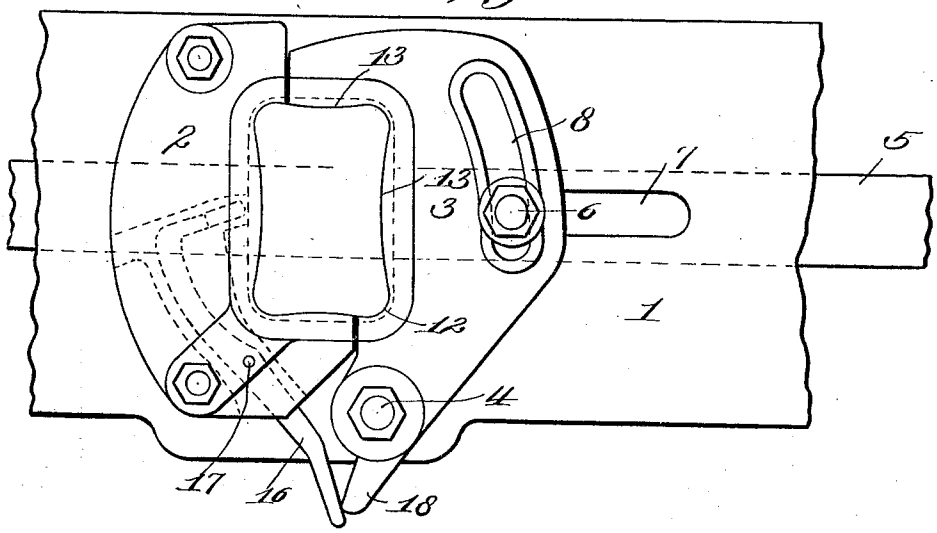


Fig. 2.

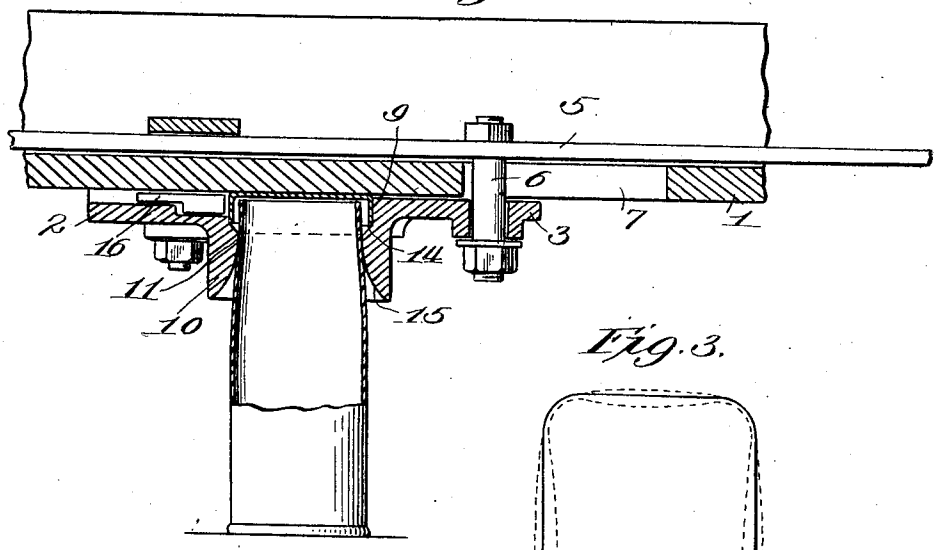
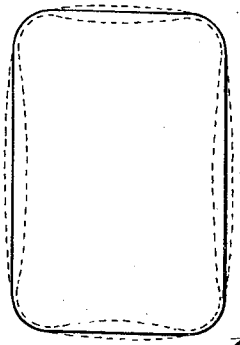


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK J. HEYBACH, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNIT WEIGHING AND PACKING SYSTEM (INCORPORATED), OF BALTIMORE, MARYLAND, A CORPORATION OF DELAWARE.

CAPPING DEVICE.

1,111,581. Specification of Letters Patent. Patented Sept. 22, 1914.

Application filed March 31, 1910. Serial No. 552,584.

To all whom it may concern:

Be it known that I, FREDERICK J. HEYBACH, a citizen of the United States, residing in Baltimore city and State of Maryland, have invented new and useful Improvements in Capping Devices, of which the following is a specification.

My present invention relates to improvements in machines for applying caps to receptacles such as cans filled with powdery or other material, and the improvements are particularly adapted for use in connection with a capping machine of the type disclosed in my prior Patent, No. 935,505 granted September 28, 1909.

The object of my present invention is to provide an efficient cap clamp which is capable of applying caps rapidly and with certainty to cans or other receptacles having a generally rectangular or other angular shape, the clamp serving not only as a holder for one part but is formed with means to operate upon the relatively flat sides of the other part of the can and press such sides inwardly so as to temporarily assume a substantially concave form. By providing a cap clamp of this character, bulging of the sides of the can mouth, particularly in those cases where the material is packed into the can under pressure, is eliminated, and the flat sides of the can while so pressed inwardly will enter the cap with the greatest facility and without the possibility of such parts catching upon one another especially as the concave form assumed by the flat can sides will reduce the effective dimensions of the can mouth. When the can with the cap applied thereto, is released, the mouth of the can in resuming its normal shape will expand within the cap and thereby secure the cap firmly thereon.

With these objects in view, the invention consists in certain features of construction which will be set forth fully in the following specification, and the novel features will be pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 represents a bottom plan view of a cap-applying clamp constructed in accordance with my present invention, the jaws or members of the clamp being shown in closed position; Fig. 2 represents a vertical section through the clamp and illustrating diagrammatically the action of the improved clamp upon the can mouth during the application of a cap thereto; and Fig. 3 is a diagrammatic view of a can mouth, the full lines indicating substantially the normal outline of the can mouth and the dotted lines indicating respectively the approximate form assumed by the can mouth when the material is packed therein and when the can mouth is contracted by the clamp to facilitate the application of the cap.

Similar parts are designated by the same reference characters in the several views.

Cap-applying clamps constructed in accordance with my present invention are capable of use generally in connection with machines or devices for applying caps to cans or receptacles having a rectangular or angular form as distinguished from cans having cylindrical mouths, although the present improvements are particularly adapted for use in connection with a capping machine of the type disclosed in my prior patent aforesaid.

It will be understood that in using the term "can" I do so in a generic sense to include not only the ordinary metallic cans but also such other receptacles as may be found suitable. The term "cap" also includes closures in the broad sense.

In the present instance, the clamp is carried by a support 1 which may be a cap-transferring and applying member such as that disclosed in my aforesaid prior patent. The clamp is preferably composed of two jaws or members at least one of which is capable of an opening and closing movement in order that a can mouth with a cap applied thereto may be released from the clamp and another cap received by the clamp while the latter is in open position and the cap so received held securely within the clamp when the latter is in closed condition. In that form of the invention shown, the clamp is composed of the complemental jaws 2 and 3, the jaw 2 being fixed with respect to the support 1 while the movable jaw 3 is pivoted to the support so as to swing upon the center 4. Any suitable means may be provided for moving the jaw 3 into open and closed positions at ap-

propriate intervals, a reciprocatory clamp-actuating bar 5 being shown in the present instance which is suitably guided upon the support 1 and which has an operating stud 6 which projects from a longitudinal slot 7 in the support 1 and operates in a segmental slot 8 formed in the movable jaw 3 whereby a reciprocating movement of the bar 5 will operate to swing the movable jaw into open and closed positions about the pivot 4 as a center.

The jaws or members 2 and 3 combined, form a seat to receive and hold a cap during the application of the latter to the can. In the present instance, the jaws or clamp members are rabbeted as at 9 to form a cap-receiving recess, the outline of which conforms substantially to the angular form of the cap. In the present instance, the clamp is adapted to apply the caps upon cans having a substantially rectangular outline, and this rabbet 9 therefore has an outline of a substantially rectangular form. Below this angular cap-receiving recess, the complemental jaws or members of the clamp are formed with a flange 10, the interior surface of which projects inwardly beyond the rabbeted surface 9 so as to form a shoulder 11 through which the can mouth must pass before the cap is applied thereto. This shoulder has corners 12 which in the present instance are rounded and are adapted to receive the correspondingly shaped corners of the can, and those portions of the shoulder between the corners are convex or bowed inwardly in a direction circumferentially of the shoulder as at 13 so as to engage the flat sides and ends of the can and cause such flat sides and ends to assume convex forms as the clamp receives the can mouth. The inner surface of the shoulder at the rounded corners 12 is substantially flush with the inner surface of the flange on the can cap. The convex or inwardly extended portions 13 of the shoulder, however, are offset inwardly with respect to the inner surface of the can cap flange for a distance sufficient to cause the dimensions of the can mouth to be substantially reduced so as to facilitate the entrance of the can mouth into the cap and, moreover, the flat sides and ends of the can when bowed inwardly cannot possibly catch upon the flange of the cap. A seat 14 is formed between the shoulder 11 and the rabbeted portion 9 of the clamp which serves to support the cap within the clamp and position it properly to receive the can mouth. The opening in the flange 10 is also preferably flared as at 15 so as to position the can mouth and guide it as it enters the clamp. Any suitable means may be provided for freeing the can and the applied cap from the stationary jaw or clamp member, an ejector 16 being pivoted at 17 within a recess formed in the member 2 in the present instance, and the outer or exposed end of this ejector is adapted to be actuated by a lug 18 upon the pivotal or movable jaw or clamp member 3 when the latter is opened, the ejector being thereby carried into engagement with the cap and the cap and can are automatically freed from the clamp. An ejector of this character is disclosed in my prior patent aforesaid, and no claim is made to this ejector in the present application.

A cap-applying clamp constructed in accordance with the present invention renders it possible to rapidly and automatically apply caps to cans or receptacles the mouths of which have a rectangular or other angular outline. The clamp shown in the present instance may be used to particular advantage in connection with filling machines which pack powdery or other materials in cans or receptacles under the pressure exerted by a packer. The effect of packing material into cans having flat sides is to bulge the flat sides outwardly. When the cans in such condition are brought into position to receive caps, the bulged sides and ends of the cans are operated upon by the convex or inwardly offset portions of the shoulder within the clamp, the bulged sides and ends of the cans being thereby caused to temporarily assume a convexed form which will carry the flat sides of the can inwardly and, moreover, the effective dimensions of the can mouth are reduced so that as the clamp passes down over the can mouth, the can mouth is introduced quickly and with certainty into the can cap which is contained within the clamp. After the application of the cap to the can, the clamp is opened, thereby relieving the pressure upon the flat sides and ends of the can, and the latter is then free to expand or resume its normal shape, such expansion carrying the flat surfaces of the can mouth into close and firm engagement with the flange of the cap so that a perfectly tight and secure connection is formed between the can and the cap.

I claim as my invention:

1. A cap clamp having an opening of predetermined or fixed size and generally rectangular outline to receive the mouth of a receptacle of corresponding form, the walls of said opening being convexed circumferentially to operate upon and temporarily bow inwardly the flat sides of the receptacle as the mouth thereof is introduced into said opening, the walls of said opening being also recessed to receive and hold a cap in position to receive the mouth of the receptacle.

2. A device for applying caps to receptacles having mouths of generally rectangular outline comprising a flat plate, and a cap clamp composed of pivotally related sections mounted on one of the flat sides thereof and having an opening with circumferentially convexed walls to receive the

mouth of a receptacle and to bow inwardly the flat sides thereof, the walls of said opening being recessed at a point between the adjacent flat side of said plate and said convexed portions to receive and hold a cap therein with its closed top against said plate and its flange in position to receive the inwardly bowed sides of the receptacle mouth, the clamp sections being capable of opening to receive a cap and having means for positively closing them whereby said opening will have a predetermined or fixed size.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK J. HEYBACH.

Witnesses:
CLARENCE A. BATEMAN,
CHAS. S. HYER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."