G. W. GWINN.

CAN CLOSING MECHANISM.

APPLICATION FILED DEC. 1, 1914.

1,276,523.

Patented Aug. 20, 1918.

2 SHEETS—SHEET 1.

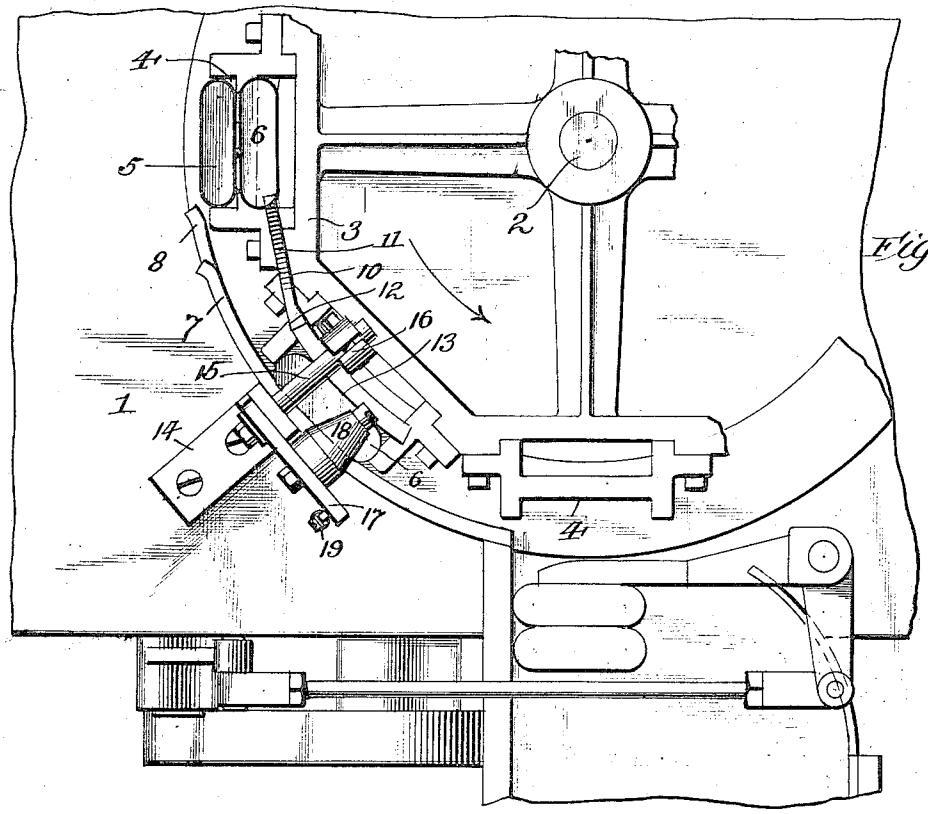


Fig. 1.

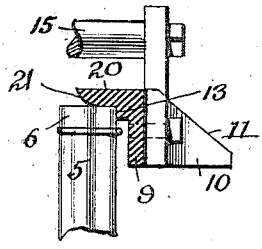


Fig. 11.

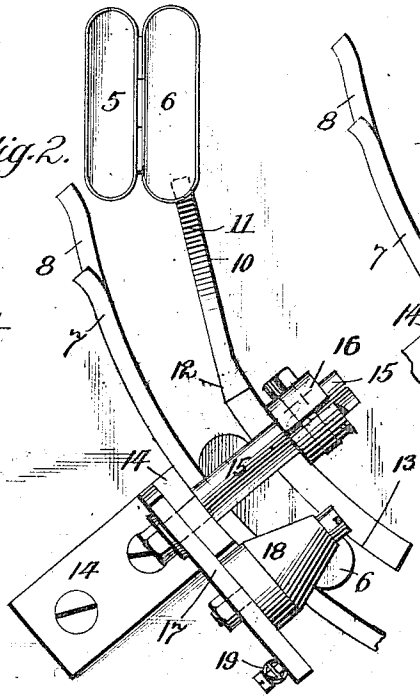


Fig. 2.

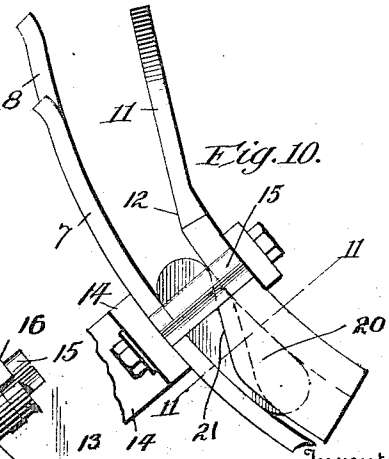


Fig. 10.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

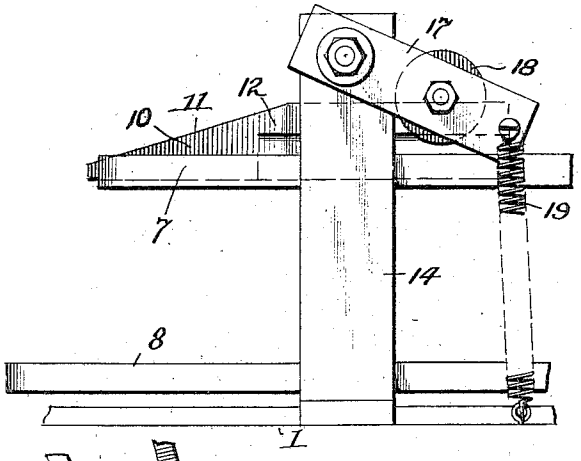


Fig. 4.

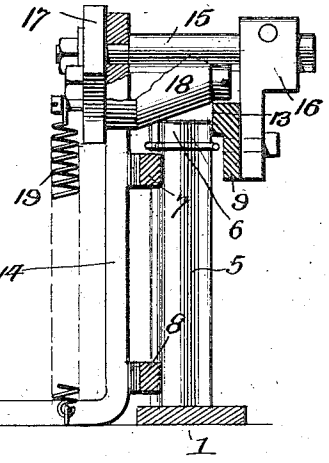


Fig. 12.

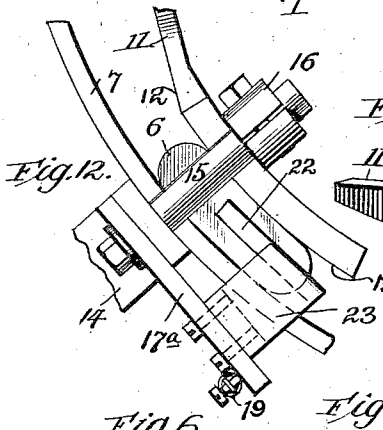


Fig. 5.

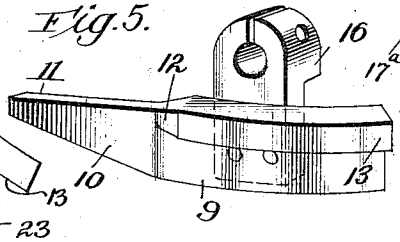


Fig. 13.

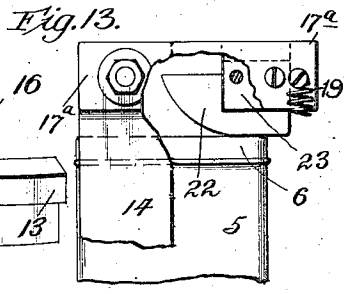


Fig. 6.

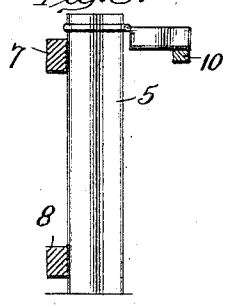


Fig. 7.

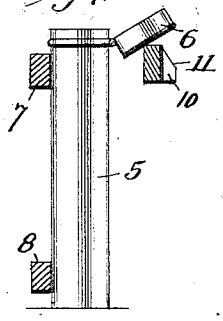


Fig. 8.

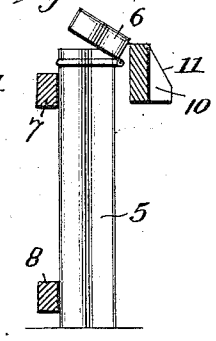
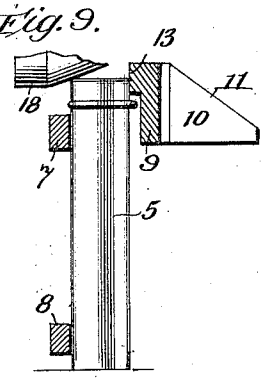


Fig. 9.



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UNITED STATES PATENT OFFICE.

GEORGE W. GWINN, OF NEW YORK, N. Y., ASSIGNOR TO AUTOMATIC PACKING & LABELING COMPANY, OF DURHAM, NORTH CAROLINA, A CORPORATION OF NORTH CAROLINA.

CAN-CLOSING MECHANISM.

1,276,523. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed December 1, 1914. Serial No. 875,016.

To all whom it may concern:

Be it known that I, GEORGE W. GWINN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Can-Closing Mechanism, of which the following is a specification.

My present invention pertains to an improved can-closing mechanism, and has for its main object the provision of means or mechanism for automatically closing the lid of a can.

Heretofore in can factories the hinged lids of cans have been closed upon the body by hand, preparatory to shipment of the cans, and where tobacco or other material has been packed in tins having a hinged body, the lid has been manually closed. The present invention is designed to do away with this hand operation, and to effect such closing expeditiously and automatically.

In the annexed drawings, I have disclosed one embodiment of my invention, wherein:

Figure 1 is a top plan view of the mechanism;

Fig. 2 a similar view on a somewhat enlarged scale;

Fig. 3 a side elevation of the cams employed to tilt the lid upwardly and over the top of the can;

Fig. 4 a sectional elevation, looking at right angles to Fig. 3, of the same parts;

Fig. 5 a perspective view of the closing cam;

Figs. 6 to 9 inclusive vertical sectional views showing the can and its lid in different positions with relation to the cam and the top-closing roller;

Fig. 10 a top plan view of a modified arrangement of the final closing mechanism;

Fig. 11 a transverse sectional view on the line 11—11 of Fig. 10;

Fig. 12 a top plan view of a further modified arrangement of the final top-closing mechanism; and

Fig. 13 a side elevation, partly broken away, of such modified construction.

As above noted, prior to the shipment of hinged-top cans from can factories it is, of course, essential to close the lids in order that they may be properly stacked and boxed or crated, and this operation has heretofore, so far as I am aware, been accomplished by hand. So, too, in the packing of various materials, and particularly tobacco in cans having hinged tops, the tops have likewise been closed by hand, entailing much expense. In the accompanying drawings I have illustrated a simple form of apparatus for accomplishing the desired result, it being understood, however, that in so far as the generic invention is concerned the structure may be varied in details without departing from the spirit of my invention.

In the drawings, 1 denotes the table, 2 a vertical shaft and 3 the turret or carrier, provided with pockets 4 for the reception of can-tops, which are designated by 5. The turret is adapted to be rotated in the direction of the arrow in Fig. 1, and the open lid of the can (designated by 6) normally occupies the position shown in Figs. 1 and 6, when it is introduced into the machine. This introduction may be mechanical or otherwise, and the feeding of the cans to the machine forms no part of my present invention. The rotation of the turret carries the can-body against two rails or guide-bars 7 and 8, formed concentrically with the axis of the shaft 2. The outer ends of these bars, as will be seen upon reference to Figs. 1 and 2, are preferably out-turned or curved so as to provide for proper entrance of the can into working relation therewith, and to force the can-body back into the pocket 4, so that it will be firmly held in position as it is carried around into working relation with the top-closing mechanism. Said mechanism may be said to comprise a lifting and turning cam adapted to pass under the out-turned cover or lid and to gradually turn it over onto the top of the can, and a roller which contacts with the upper face of the lid after it is so turned and forces the same down upon the body of the can. The cam will be best understood upon reference to Figs. 2 and 5, and may be said to comprise a body portion 9, having an outwardly-extending finger 10, which finger is provided on its upper face with an upwardly-inclined cam or cam surface 11. Formed upon the outer or front face of the body 9, at the point of juncture between the finger 10 and said body is a second cam 12, which cam merges into the front face of the finger 10, and into a rib or projection 13 formed upon the body 9, as a continuation of said cam 12.

The rib 13 is formed upon a line concentric with the axis of the shaft 2, but as will be clearly seen upon reference to Figs. 1 and 2, the finger 10 extends inwardly so as to underlie the rearwardly-turned can-top at a point adjacent its outer edge, so that as the can is carried around, the cam surface 11 will gradually turn the top without straining the same in any way.

14 denotes a fixed standard to which the rails 7 and 8 are secured, said standard carrying at its upper end a horizontally-disposed rod 15, said rod in turn having secured to its opposite end an adjustable bracket 16, which forms the support for the member 9. A swinging arm or lever 17 is mounted upon the reduced end of the rod 15, and a roller 18 is radially mounted upon a stud carried by said arm or lever 17. Normally the arm and roller are drawn downwardly by a spring 19. The roller, as will be seen upon reference to the drawings, extends inwardly beyond the upper rail 7 and contacts with the lid 6 after the same has been turned upwardly and downwardly by the action of the cams 11 and 12. In the form shown the working face of the roller 18 is inclined or the roller may be said to have the form of a cone, but this is not essential except with a lid having a peculiarly shaped top as, for instance, one having a bulge therein. The inclined form, however, facilitates the proper contact of the roller with the can-top.

It is thought that the operation of the apparatus will be clearly understood from the foregoing description and upon reference to the drawings, but it may be said that initially the can and its top occupy the positions shown in Figs. 1, 2 and 6. Upon rotation or movement of the turret the can-body first comes into contact with the outer end of the rail 8, which tends to crowd it back into the pocket and the outer end of the cam 11 extends beneath the can-top and begins to turn the same. As the movement continues, the top is gradually moved or swung upwardly into the position shown in Fig. 7, the can at such time coming into contact also with the upper guide-rail 7 and being held thereby. A further movement throws the lid or top over into the position shown in Fig. 8, and the cam surfaces 11 and 12 so position the lid or top that it may readily pass beneath the roller 18, which tends to force the lid downwardly into its fully closed position, as shown in Figs. 4 and 9. The spring 19 affords a yielding pressure for the roller, and likewise prevents damage to the parts in case the can-top or lid should not be properly closed by the cams, owing to the faulty construction of the lid or the hinged connection thereof with the body, or for any other cause.

Instead of having a roller overlying the path of movement of the can at all times, it may be so arranged as to be periodically moved inwardly and outwardly in timed relation to the can feeding or advancing means, in order to effect the closing of the top. In other words, it is intended to claim generically in this case mechanism which will raise the lid, swing it into position over the can body, and close the same upon the body.

In Figs. 10 and 11 I have shown a cam face adapted to act upon the up-turned lid and to finally close the same upon the can body. Said cam is designated as a whole by 20 and as will be seen more particularly upon reference to Fig. 11, it is carried by the body portion 9 and extends outwardly in a horizontal plane above the rib or projection 13. The forward edge 21 of the cam is inclined or stands at an angle with reference to the path of movement of the can and is preferably rounded, as clearly shown in the sectional view, Fig. 11.

The operation of the mechanism, it is thought, will be clearly understood. When the can top or lid 6 is thrown upwardly into position with relation with the cams 11 and 12 the rear edge thereof will contact with the forward portion of the inclined edge 21, and will be gradually turned downwardly thereby as the can moves thereunder.

In Figs. 12 and 13 I have shown a still further modification, wherein, instead of employing a roller, a spring-pressed cam cooperates with the lid or top to finally close the same. Said cam is designated by 22, and its forward end is rounded, as shown in Fig. 13, the cam being carried by a laterally-extending arm 23 which in turn is secured to a pivoted lever 17^a, which corresponds with the arm 17 of the construction first described. The spring 19 tends to hold the cam in its lowest position, and as the can moves under the cam its curved surface will strike against the lid and gradually force it down into its closed position.

Any form of mechanism for advancing the cans to the initial lid-closing or turning mechanism and beneath the final closing mechanism may be employed, it not being essential that the cans be carried around in a turret, as a reciprocating slide or the like may be employed to advance the cans into proper working relation with the closing mechanism.

Having thus described my invention, what I claim is:

1. In a machine of the character specified, the combination of means for turning the hinged cover of a can over the top of the can-body; a roller adapted to contact with and fully close said top; and means for moving the can into coöperative relation with the aforesaid means and roller.

2. In a machine of the character specified, the combination of means for turning the

hinged cover of a can over the top of the can-body; and a spring-pressed roller adapted to contact with and fully close said top.

3. In a machine of the character specified, the combination of means for turning the hinged cover of a can over the top of the can-body; and spring-pressed means adapted to contact with and fully close said top.

4. In a machine of the character specified, the combination of a cam adapted to pass beneath the under face of a downwardly-turned hinged can-top and to turn the same upwardly; a closing roller adapted to act upon said top when the same is turned upwardly to close the top; and means for traversing the can past said instrumentalities.

5. In a machine of the character specified, the combination of means for supporting and traversing a hinged-top can; a cam standing in line with the out-turned cover of the can and adapted, as the can moves past the same, to turn the top upwardly and over the can-body; and a spring-pressed roller adapted to contact with the top and to press the same to its closed position.

6. In a machine of the character specified, the combination of means for supporting and traversing a hinged-top can; a cam adapted to underlie the out-turned top and to partially turn the same; a second cam contacting with the rear side of the top and continuing such turning movement; and means for finally pressing the top to its closed position.

7. In a machine of the character specified, the combination of means for supporting and traversing a hinged-top can; a member lying in rear of the path of movement of the can, said member being provided with means to turn the can-top upwardly and downwardly upon the can-body; means for positively closing said top; and means to hold the can in proper working relation with said operating means.

8. A machine for closing receptacles having hinged flanged lids, comprising, in combination, means for successively advancing receptacles with the lids thereof in substantially horizontal open position; and a lid-closing device located above the path of the receptacles and operative to engage beneath and to swing each lid into closed position.

9. In a machine of the character specified, the combination of means adapted to pass beneath the under face of a downwardly-turned hinged can-top and to turn the same upwardly; a closing roller adapted to act upon said top when the same is turned upwardly to close the top; and means for traversing the can past said instrumentalities.

10. In a machine of the character specified, the combination of means for supporting and traversing a hinged-top can; a member lying in rear of the path of movement of the can, said member being provided with means to turn the can-top upwardly; means for positively closing said top; and means to hold the can in proper working relation with said operating means.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. GWINN.

Witnesses:

ALFRED C. BUENSOD,

JAMES W. LEARY.