Oct. 16, 1923. 1,470,910

W. D. BANES

ACTUATING DEVICE

Filed June 24, 1921

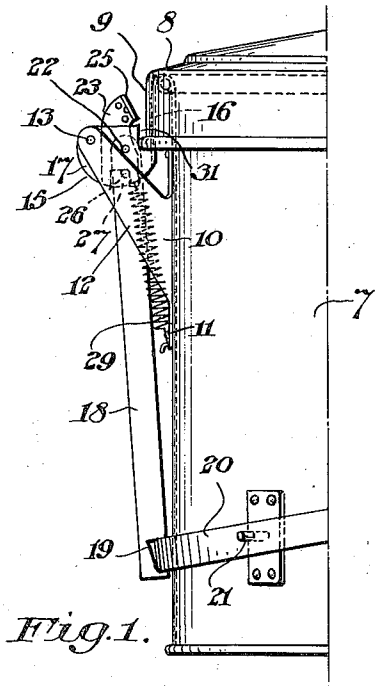


Fig. 1.

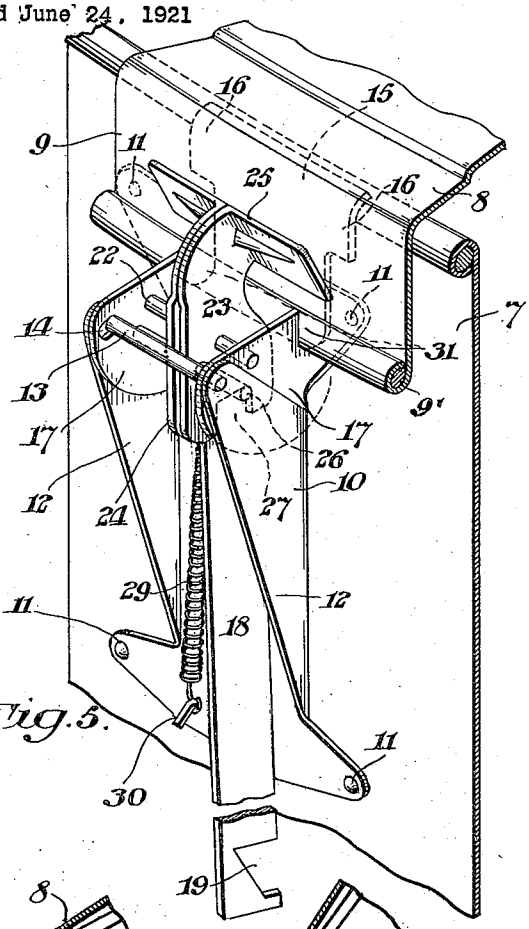


Fig. 5.

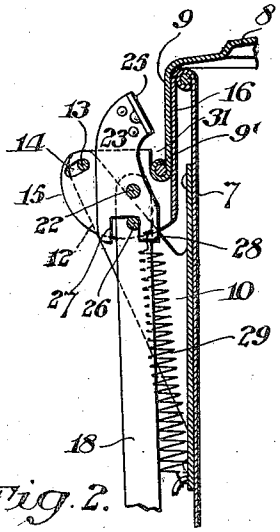


Fig. 2.

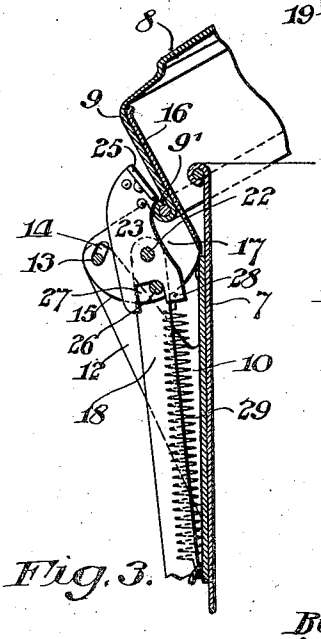


Fig. 3.

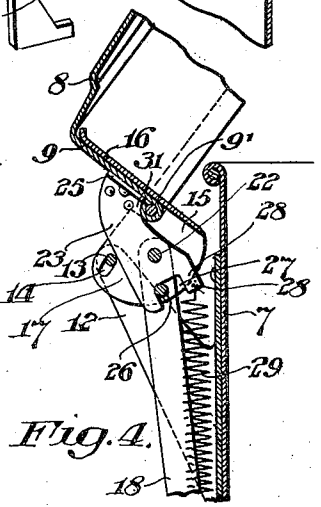


Fig. 4.

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UNITED STATES PATENT OFFICE.

WALTER D. BANES, OF GERMANTOWN, PENNSYLVANIA, ASSIGNOR TO GENERAL PRESSED METAL COMPANY, A CORPORATION OF PENNSYLVANIA.

ACTUATING DEVICE.

Application filed June 24, 1921. Serial No. 480,129.

To all whom it may concern:

Be it known that I, WALTER D. BANES, a citizen of the United States, residing at Germantown, in the county of Philadelphia, State of Pennsylvania, have invented a new and useful Actuating Device, of which the following is a specification.

My invention relates to improvements in actuating devices, and is especially adapted for actuating the covers of receptacles. The object is to provide improved means for actuating and controlling said cover.

The invention comprises self-containing means for actuating an element such as a cover and for maintaining the same in desired position by a foot-operated pedal or other arbitrarily actuated means.

The invention especially comprises improvements in the mechanism shown in my co-pending application, filed May 14, 1921, having Serial No. 469,549, and is directed chiefly to simplifying and improving the mechanism for making its actuation more certain and positive, and for assuring the proper positioning of the cover, when the same is removed and replaced upon the receptacle, in proper actuating relationship with the actuating means.

Among the principal features of improvement over the actuating mechanism specifically described in my said co-pending application, are the following:

The clamping member which is adapted to engage the outside of the flange or rim of the cover is by my improved construction positioned above the supporting wings or bracket frame, so that said clamping member may have a greater, or a sufficient lateral extension, without necessitating an undue separation or widening of the wings or supporting bracket structure for said mechanism. This makes it possible to produce a more compact and better mechanical structure. This clamping member is so positioned above the supporting wings and other parts of the actuating structure that it forms a guide and also a shield to assure the proper travel of the flange or rim of the cover when the same is placed upon the receptacle and prevents the accidental engagement of said rim or flange with other parts of the structure, which might tend to interfere with the proper seating of the cover. This clamping member is spring controlled and is so positioned that there is permitted a preliminary movement of the cover before the same engages with the clamping member. This results in an easy initial actuating movement of the cover. By the improved arrangement there is also formed a cushioning stop prior to the end of its opening movement comprising a spring control on said clamp which tends to retard its final movement or the last portion of its movement into final open position. This cushioning of the final movement, or gradual arresting of the cover when it reaches said open position, saves the cover from undue strains which would result from suddenly arresting its movement, and thus, to a large extent, prevents injury to the cover and especially its rim or flange. The fact that the spring tension is not substantially affected until the preliminary opening movement has taken place, renders it easier to operate the actuating mechanism.

The clamping member is so proportioned positioned and operated that, in the initial position, the point of spring connection, and the fulcrum of the clamping member are in approximate alinement with the direction of pull of the spring; in which position the spring exerts the least power. As the clamping member moves from the initial position to the final position the line between the fulcrum and spring connection tends to assume a position at an angle with the line of pull of the spring, which tends to increase the power exerted by the spring as the member moves into final position.

Referring to the drawings which illustrate merely by way of example suitable means for effecting my invention:—

Fig. 1 is a side elevation of a portion of a receptacle and cover showing the actuating means which includes my invention.

Figs. 2, 3 and 4 are fragmentary vertical sections on a slightly reduced scale than that of Fig. 1, showing the actuating mechanism and associated parts in different positions.

Fig. 5 is a perspective view, on a still larger scale, of said actuating mechanism and adjacent parts.

Similar numerals refer to similar parts throughout the several views.

In the example shown in the drawings, 7 represents a portion, or a fragmentary part of a can or other receptacle, 8 represents a

lid or cover having a downwardly projecting rim or flange 9. This cover 8 with the rim 9 fits loosely upon and around the top of the receptacle 7, so that there is a reasonable amount of play between the flange 9 and the upper wall of the receptacle 7. The bracket member 10 is secured in any suitable way, as for example by means of rivets 11, to the side walls of the receptacle 7, and is provided with the wings 12. Near the upper outer ends of the wings 12 is provided the pivot pin 13, upon which is loosely mounted, by means of the slotted openings 14, the clamping element 15, which comprises the vertically extending plate 16, curved, as to its horizontal cross-section, to correspond to the curvature of the receptacle, and also curved partially over the top margin of the wall of receptacle 7, and the two parallel vertically extending wings 17 bent at right angles to said vertical extension 16, adapted to fit snugly within or between the wings 12 of bracket member 10. These wings 17 are provided with said slotted openings 14. A vertically extending rod 18 is connected at its lower end by means of the slotted arrangement 19 with the lever member 20, pivoted to the receptacle at 21 and provided at its free end, with the foot pedal, not shown in this application but clearly shown and described in my said co-pending application. The upper end of this lever or rod 18 is pivotally connected to the wings 17 of clamping element 15 by means of the pivot pin 22. This pin also connects rod 18 with the clamping element 23, which is provided with a downwardly extending bifurcated portion 24 embracing the upper end of rod or lever 18. Clamping element 23 is also provided with the horizontal clamping extension 25 which normally occupies a position in a plane inclined to the vertical, as clearly shown in Figs. 1 and 2. This clamping extension 25 is also curved to correspond to the curvature of the flange 9. Lever or arm 18 is also provided with another pin 26 which is preferably driven into said arm 18 and firmly secured therein against accidental displacement. This pin 26 extends on both sides of lever 18 with its ends projecting to the inner planes or surfaces of wings 17. The ends of this pin 26 project also into slots or recesses 27 provided in the lower edges of the bifurcated extensions 24 of clamping element 23 and is adapted to have a relative movement from one end to the other of said recesses 27. An inner portion or leg 28 of the lower bifurcated extension 24 is bent slightly out of its general plane and is connected with one end of the spring 29; the other end of said spring 29 is connected to a projection 30 from the lower part of bracket member 10.

It should also be noted that pockets or recesses 31 are provided or formed in the wings 17 adjacent the upwardly extending portion 16. These pockets are adapted to receive the lower edge of cover flange 9.

In operation:

When the right hand end of lever member 20 is depressed the left hand end of said lever and the bar 18 connected therewith, are elevated; this causes a tilting movement of clamping element 15 so that the vertical plate portion 16 moves upwardly and out of the vertical position into the inclined position, and carries with it the cover 8, as shown in Fig. 3. It should be noted here, that the flange 9 of the cover fits snugly over the vertical portion 16 of clamping element 15 and that the rolled portion 9′, or lower margin of said flange 9, fits snugly in the pockets or recesses 31 of wings 17. It should also be noted that in the initial position, as shown in Figs. 1 and 2, the clamping element 25 is so spaced from plate 16 that space is afforded for the passing of the rim 9 and margin 9′ between said elements 25 and 16. As soon however as the parts begin to move from initial position, elements 16 and 25 approach each other and the pocket or space 31 becomes partially closed so that said rim or margin 9′ cannot be removed therefrom. This is indicated in Figs. 3 and 4. It will also be noted that the clamping element 15 is loosely pivoted on the pivot pin 13, by means of the elongated slots 14, and that this affords such freedom of movement of said clamping element 15 that it can accommodate itself to the disengaging movement of the lid 8, and thus prevent a binding of the lid with the receptacle. For example in Fig. 2, it will be noted that the pin 13 occupies the upper right hand end of slot 14 and that after the initial movement of the parts, the element 17 is so moved that the pin assumes a position in the lower left hand end in said slots 14. As the clamping element 15 is moved to the initial position, it will also be noted the clamping element 25 has a relative movement toward the clamping plate 16 until a position, slightly in advance of that shown in Fig. 4, is reached; whereupon the further movement causes a positive clamping of the rim 9 of cover 8 between clamping plate 16 and clamping plate 25. At this point clamping member 25 is given a pivotal movement on pivot pin 22, which movement is finally limited by the engagement of pin 26 against the left hand margin of slot or recess 27, as clearly shown in Fig. 4. As will be seen, from a comparison of Figs. 3 and 4, the spring 29 increases its tension as the clamping member 25 turns on its pivot and the line, between its fulcrum 22 and point of spring connection, moves out of alinement with the direction of spring pull, and, as before stated, this

serves as a gradual cushioning of the final movement of the cover, until the pin 26 reaches the left hand end of slot or recess 27, which is the final step of the lid's actuation.

What I claim is:—

1. Actuating mechanism for flanged covers comprising means forming a pocket adapted to receive and retain in its actuating positions a portion of the cover flange and arbitrarily actuated means for simultaneously lifting and tilting said cover.

2. Actuating mechanism for flanged covers comprising means forming a receiving pocket for a portion of the cover flange, means adapted to prevent the disengagement thereof and arbitrarily actuated means for simultaneously lifting and tilting said cover.

3. Actuating mechanism for flanged covers comprising means forming a pocket for a portion of the cover flange, into which said portion is adapted to move by gravity, arbitrarily actuated means for simultaneously lifting and tilting said cover, and means operating to prevent disengagement of the cover from the pocket during said actuation.

4. Actuating mechanism for flanged covers comprising means forming a pocket for a portion of the cover flange into which said portion is adapted to move by gravity when the cover is placed upon the receptacle, and arbitrarily actuated means for simultaneously lifting and tilting said cover, and means operating to prevent disengagement of the cover from the pocket during said actuation.

5. Actuating mechanism for covers comprising means forming a pocket for a portion of the cover and arbitrarily actuated means comprising simultaneously acting clamping elements for lifting and tilting said cover and preventing its disengagement from the pocket.

6. Actuating mechanism for covers comprising means forming a pocket for a portion of the cover and arbitrarily actuated means comprising simultaneously acting cooperating clamping elements for securing the said portion in the pocket and for lifting and tilting the same.

7. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted.

8. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the flange or rim of a cover provided with an enlarged or beaded margin, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted.

9. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the flange or rim of a cover provided with an enlarged or beaded margin and clamping means for clamping or engaging the flange above said bead, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted.

10. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the flange or rim of a cover provided with an enlarged or beaded margin and clamping means for clamping or engaging the flange above said bead, said clamping means being formed and operated so as partially to close the recess after the beaded part has been received therein, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted.

11. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including clamping elements having engaging faces or surfaces positioned above the bracket.

12. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including clamping elements having engaging faces or surfaces positioned above the bracket, and having a horizontal extension beyond the sides of the bracket.

13. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled.

14. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled and mechanical means for limiting its movement in each direction.

15. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for

actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled and mechanical means for limiting its movement in each direction, said actuating means including a spring controlled pivoted clamping element arranged so that in initial position, its supporting pivot and point of spring connection are in substantial alinement with direction of spring pull.

16. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled and mechanical means for limiting its movement in each direction, said actuating means including a spring controlled pivoted clamping element arranged so that in initial position, its supporting pivot and point of spring connection are in substantial alinement with direction of spring pull, said points departing from said alinement as the said element moves from initial to final position.

17. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled and mechanical means for limiting its movemnt in each direction, said actuating means including a spring controlled pivoted clamping element arranged so that in initial position, its supporting pivot and point of spring connection are in substantial alinement with direction of spring pull, thereby providing means for easy preliminary movement.

18. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including a clamping element being spring controlled and mechanical means for limiting its movement in each direction, said actuating means including a spring controlled pivoted clamping element arranged so that in initial position, its supporting pivot and point of spring connection are in substantial alinement with the direction of spring pull, thereby providing means for easy preliminary movement, and cushioned resistance toward the limit of final movement.

19. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, and means for automatically guiding the lid into operative relationship with said actuating means upon placing it on the receptacle.

20. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, and means for preventing the separation of the cover from its actuating means after the beginning of initial or preliminary opening movement.

21. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, and means for preventing the separation of the cover from its actuating means after the beginning of initial or preliminary opening movement and until the actuating mechanism has assumed the closing or substantial closing position.

22. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including clamping elements cooperating to maintain the recess forming elements in such position as to restrict the opening to prevent withdrawal therefrom of cover except when the parts are in substantial cover closing position.

23. Actuating mechanism for covers comprising a supporting bracket, means movably supported by the bracket forming a recess for receiving the cover, and means for actuating the recess forming means whereby the cover is secured in the recess and lifted and tilted, said actuating means including clamping elements cooperating to maintain the recess forming elements in such position as to restrict the opening to prevent withdrawal therefrom of cover except when the parts are in substantial cover closing position, and one clamping element forming a guide to direct the cover flange automatically into said recess and into operative relationship with the actuating mechanism.

24. Actuating mechanism for receptacle covers, comprising a supporting structure

secured to the receptacle, actuating elements connected therewith adapted to form a recess for receiving a portion of the cover, and to provide means for preventing disengagement thereof during said actuation.

25. Actuating mechanism for receptacle covers, comprising a supporting structure secured to the receptacle, actuating elements connected therewith, adapted to form a recess for receiving a portion of the cover, and to provide a guide to carry said cover portion free from said supporting structure and into said recess.

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