A. A. ENGLUND.

CAN END CHUCK.

APPLICATION FILED MAR. 22, 1918.

1,367,953. Patented Feb. 8, 1921.

Fig. 1.

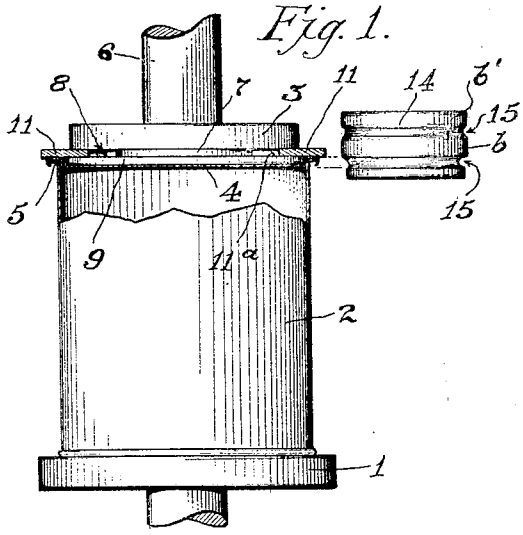


Fig. 2.

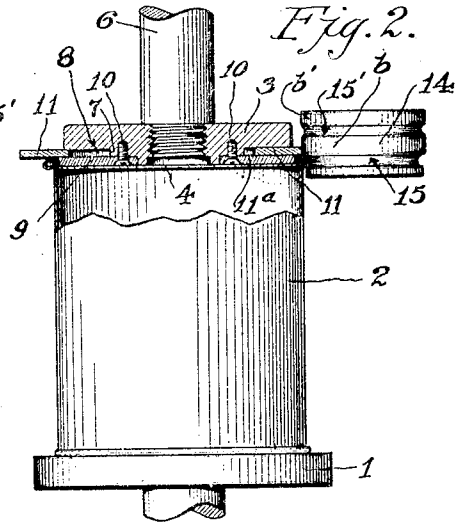


Fig. 3.

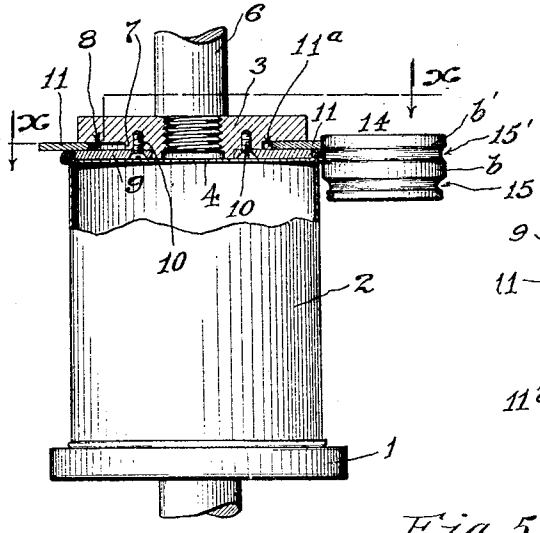


Fig. 4.

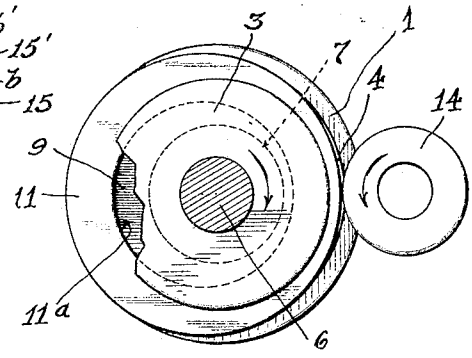
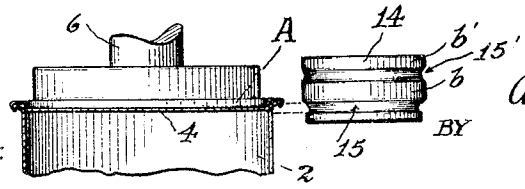


Fig. 5.



WITNESS.

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CAN-END CHUCK.

1,367,953. Specification of Letters Patent. Patented Feb. 8, 1921.

Application filed March 22, 1918. Serial No. 223,972.

To all whom it may concern:

Be it known that I, AXEL A. ENGLUND, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Can-End Chucks, of which the following is a specification.

The present invention relates to a can end chuck for use in the clamping or holding of a flanged end or cover to a flanged body during the operation of seaming the cover or end to such body, as for example, the uniting or seaming of a can end or cover to a can body used for the preservation of food products and other material desired to be hermetically sealed.

In can end seaming mechanism, there is ordinarily employed a can end chuck for the holding or clamping of a flanged can end to the flanged end of a can body during the operation of double seaming, and in this class of machinery it is the usual practice to seam adjacent flanges of the can body and end in two distinct operations, due to the fact that a suitable hermetic seam cannot be formed properly in one operation. These seaming operations ordinarily are carried out either by the employment of two radially movable rotating grooved seaming rolls, one for each operation, or by the use of a single lineally and radially movable rotating roll provided with two adjacent seaming grooves in its periphery, each of which grooves is adapted for performing one seaming operation.

For the forming of a perfect seam it is required that there be perfect registry between the seaming grooves and the adjacent flanges of the can body and the end clamped thereto, inasmuch as a very slight error in adjustment of the grooves of the seaming roll or rolls relative to the adjacent flanges of the positioned can end and body will result during the seaming operation of the formation of an imperfect hermetic seam. Inasmuch as the height or length of can bodies varies slightly, there are times during the operation of the seaming mechanism when the adjacent flanges of a can body and an end held clamped thereto will be slightly out of alinement with the seaming groove of the seaming roll or rolls, with the result that an imperfect seam is formed. It is, therefore, highly desirable to reduce the chance for the occurrence of such an error to a minimum, and such is the main object of the present invention, which object is attained by providing the can end chuck with a radially slidable gage plate, loosely held thereto and which is acted on by the seaming roll as the same is moved radially inward to place its seaming groove in contact with the adjacent flanges of a held can body and end, so as to true or to bring into true registry the groove of the seaming roll relative to the flanges to be double seamed.

By the use of the present invention there is a gage provided for the exact height of the can and seam to be acted upon by the groove of the seaming roll or rolls; the spinning over of the metal acted upon during the formation of the seam relative to the can end chuck is provided against, and the upward thrust strain is removed from the seaming roll or rolls during the seaming operation thereof.

In the present case the can end chuck is illustrated as having associated therewith for the double seaming operation, a seaming roll provided with two adjacent seaming grooves in the periphery thereof, although it is obvious that the use of the invention is not limited to a double grooved seaming roll, but is equally as well adapted for use in connection with any type of seaming rolls at present employed for the double seaming of the adjacent flanges of can bodies and ends or covers clamped thereto.

In order to comprehend the invention reference should be had to the accompanying drawings, wherein,

Figure 1 is a part sectional view in elevation illustrating a flanged can end or cover held clamped to a flanged can body by the can end chuck, said view disclosing the position of a double grooved seaming roll prior to being moved radially for acting on the adjacent flanges of the can end and body.

Fig. 2 is a similar view illustrating the action of the first seaming groove of the roll relative to the flanges of the can end and body and disclosing the action of the said roll as to the movable gage plate of the can end chuck.

Fig. 3 is a similar view illustrating the seaming roll positioned for final action on the partly formed seam of the flanges of a can body and its end.

Fig. 4 is a top plan sectional view taken on the irregular line *x*—*x* Fig. 3 of the drawings and viewed in the direction of the arrows.

Fig. 5 is a broken detail sectional view illustrating the form of a can end chuck ordinarily employed for holding a can end to its can body during the operation of double seaming the flanges thereof.

In the drawings, the numeral 1 is used to designate a freely rotatable can body rest or support, for receiving and supporting a can body 2 during the double seaming operation, which body is held to its seat by means of a can end chuck 3, which chuck, when in its lowered position clamps or holds a flanged can end 4 to the flanged end 5 of the positioned can body 2. The said can end chuck 3 is united in any suitable manner to a rotatable spindle 6 and the lower face of the said can end chuck is cut away or reduced as shown at 7 so as to provide an annular groove or seat 8, when the end face plate 9 of the chuck is applied thereto, which end face plate is held to the chuck in the present case by means of the screw bolts 10, Figs. 2 and 3 of the drawings. Within the annular groove or seat 8 is slidably mounted a horizontally movable gage plate 11, which plate is held in place relative to the can end chuck by means of the removable end face plate 9, it being understood that the end plate 9 constitutes and forms a portion of the can end chuck 3, the said end plate 9 being of a diameter slightly less than the unflanged portion of the can end 4 in order to provide a mandrel, so to speak, to receive the pressure of the seaming roll 14, during the seaming operation thereof. The gage plate 11, is of a diameter slightly greater than the diameter of the flanged end 5 of the can body 2, so as to project slightly beyond the walls thereof when the can end is clamped to the can body Fig. 1 of the drawings. This gage plate 11 is formed with a central bore or opening 11^a of a diameter somewhat greater than the reduced portion 7 of the can end chuck 3, so as to permit of the gage plate shifting radially under the pressure of the seaming roll 14 to move inwardly to clear the outstanding flange of the can end and can body serving at the same time to receive the radial pressure of the gradually inwardly moving seaming roll.

In the present case, the seaming roll 14 is illustrated as being provided with first and second acting seaming grooves formed in the periphery thereof and designated respectively by the numerals 15 and 15′, and as well understood in the art the seaming roll is first moved axially to place the lower or first seaming groove 15 into engagement with the flange 5 of the rotating can body 2 for initially downwardly curling the adjacent flanges of the can end and can body. The roll is then drawn radially out of engagement with the said seam and moved lineally to place its second or upper seaming groove 15′ into alinement with the partially formed seam and is then moved radially to place the said seaming groove 15′ into engagement with the partially formed seam for the final operation thereupon.

As the seaming roll 14 is moved radially to place its first seaming groove 15 into engagement with the adjacent flanges of the can end and can body to be seamed, the non-grooved portion *b* of the said roll engages with the projecting edge of the gage plate 11 and moves or slides the same radially until the seaming groove 15 is brought into engagement for acting onto the said adjacent flanges of the can end or cover and the can body to which it is applied as illustrated in Fig. 2 of the drawings. On the second action of the seaming roll 14 to place the seaming groove 15′ into engagement with the partially formed seam, the non-grooved section *b*′ of the seaming roll acts against the face of the gage plate 11. It will be understood that during the seaming operation the can body with its end 4 clamped thereto is driven at a high rotative speed, so that throughout the entire seaming operation the gage plate 11 is moved radially with respect to its seat 8, and it will be further understood that the can end chuck 3 is lowered to clamp the can end 4 to the positioned can body 2 to hold the can end clamped thereto during the seaming operation.

It will be noted from the foregoing that as the seaming roll is moved radially to bring its seaming groove into engagement with the adjacent flanges of the can end and body to be seamed, that the non-grooved portion *b* thereof first acts upon the radially movable plate 11, which gages the seaming groove relative to the metal to be acted upon and by so doing prevents the seaming roll spinning the metal of the seam being formed over the can end chuck, which is the case where the flanges of the can end and can body to be seamed project a slight distance above the seaming groove of the roll or is slightly out of alinement therewith and where the can end chuck is not provided with a movable gage plate. This will be apparent by reference to Fig. 5 of the drawings, wherein there is disclosed the ordinary can end chuck A and illustrates the flanges of the clamped can end and can body as being slightly out of axial alinement with the lowermost seaming groove 15 of the seaming roll 14, due to the can body being slightly longer than the usual body acted upon by the seaming rolls. In this case, the action of the seaming roll is to spin the metal of the flanges over the can end chuck, with the result of an imperfectly formed seam.

In the present case, there has not been

illustrated mechanism for raising and lowering the can end chuck nor raising and lowering and moving radially the seaming roll, for any suitable and well known form of inter-connected mechanism employed in the art for such purposes may be utilized, one form of such mechanism being illustrated and described in the pending application of Axel Johnson, Serial No. 157,258, filed in the United States Patent Office under date of March 24, 1917, for an improved double seamer.

The radially movable gage plate at all times when the chuck is lowered to clamp a can end to its body and hold the body to its rotatable seat, bears on the upper surface of the outstanding flange of the clamped can end, but gradually gives under the pressure of the radially movable seaming roll on the universal movement thereof. By means of the gage plate overlying the flange of the can end the metal thereof is prevented from curling upwardly during the formation of the double seam and held against spinning over the can end chuck, or in other words, the metal can only curl downwardly under the inward pressure of the radially moving seaming roll. Again as the can end chuck is adjusted in the usual manner for a downward stroke for acting relative to a can body of a given height, it is apparent that in case the said can body slightly exceeds such height, the action of the gage plate during the downward movement of the chuck relative to the flanged end of the can body will be such as to compress downwardly the flanged end thereof until the height of the can body is slightly reduced by reason of such compression of the metal, thereby positioning the adjacent flanges of the can end and body for axial alinement with the seaming groove of the seaming roll when the same is positioned for inward movement. This will be readily understood by a comparison of illustration disclosed by Fig. 5 of the drawings with that disclosed by Fig. 2 of the drawings. In Fig. 5 the height of the can body is such that its flanged end projects a slight distance above the groove of the seaming roll when positioned for inward movement to initially seam the can end to the can body, and so remains after the can body and end have been clamped by the can end chuck when in its full lowered position. Where this condition exists the tendency of the seaming roll during the seaming operation is to spin the metal of the adjacent flanges of the can end and can body over the can end chuck, due to the fact that the flanged metal of the can body is out of axial alinement with the seaming groove of the seaming roll when positioned for inward movement. Where the can end chuck is provided with a radially movable gage plate as is the case under the present invention, and the positioned can body to be acted upon is of a height slightly greater than the height of a can body for which the stroke of the can end chuck is adjusted, it is apparent that the gage plate will first make contact with the flange of the can end positioned on the flanged end of the can body, and as the can end chuck continues its downward movement to the full limit thereof, the pressure of the said gage plate brought to bear onto the flanged end of the can body compresses the same downwardly until the height of the can body is equal to that for which the stroke of the can end chuck is adjusted and the adjacent flanges of the can end and can body are placed in alinement with the groove of the seaming roll when positioned for inward movement, as disclosed by Fig. 2 of the drawings.

It will be noted that the radially movable gage plate associated with the can end chuck performs three functions, viz: It accurately gages or trues the height of the can body where the same slightly exceeds that of a normal can body for which the stroke of the can end chuck is adjusted; it acts as a guard to prevent the upcurling or spinning of the metal over the chuck during the double seaming operation and serves to reduce to a minimum the upward thrust strain on the seaming roll.

Having thus described the invention what is claimed as new and desired to be protected by Letters Patent is:

1. The combination with a can end chuck for clamping a flanged end to a flanged can body during a double seaming operation, of a gage plate secured to said chuck and adapted to engage and overlie the flange of a clamped can end during the double seaming of the same to a can body, said plate being movable relative to the can body to accommodate itself to the seaming operation, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

2. The combination with a can chuck for clamping a flanged can end to the flanged end of a can body, of a gage plate held thereto and radially movable relative to the said chuck and of a diameter adapted to embrace the flange of the can end held to a can body during the operation of double seaming, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

3. The combination with a can end chuck provided adjacent the lower end thereof with a peripheral groove, of a gage plate held within said groove for radial movement, said plate adapted to overlie the

flange of a can end when held clamped by the said chuck to a can body during a double seaming operation, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

4. A can end chuck provided adjacent its lower end with an outwardly projected gage plate, adapted to engage and overlie the flange of a can end when clamped by the chuck to the flanged end of a can body during a double seaming operation, said plate being movable relative to the can body to accommodate the seaming operation, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

5. In combination with a can end chuck, of a radially movable gage plate detachably held thereto adjacent its lower end and adapted to engage and overlie the flange of a can end held by said chuck to a can body during a double seaming operation, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

6. The combination with a can end chuck provided with a groove adjacent its lower end, of a gage plate slidably held therein and adapted to engage and overlie the flange of a can end when clamped by the said chuck to a flanged can end during a double seaming operation, said gage plate being separate from and independent of the seaming means and arranged to leave the can end flange unobstructed for access thereto of the seaming means.

7. The combination of a can end chuck having a part which is adapted to engage within a can end flange, a gage plate carried by said chuck and engageable on the top of the can end flange and movable relative to the can end and chuck in directions parallel with the can end, and a convex seaming roller adapted to perform a seaming operation on the flanges of a can end and can body, and having means to move the gage plate in said directions.

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

AXEL A. ENGLUND.

Witnesses:
N. A. ACKER,
D. B. RICHARDS.