

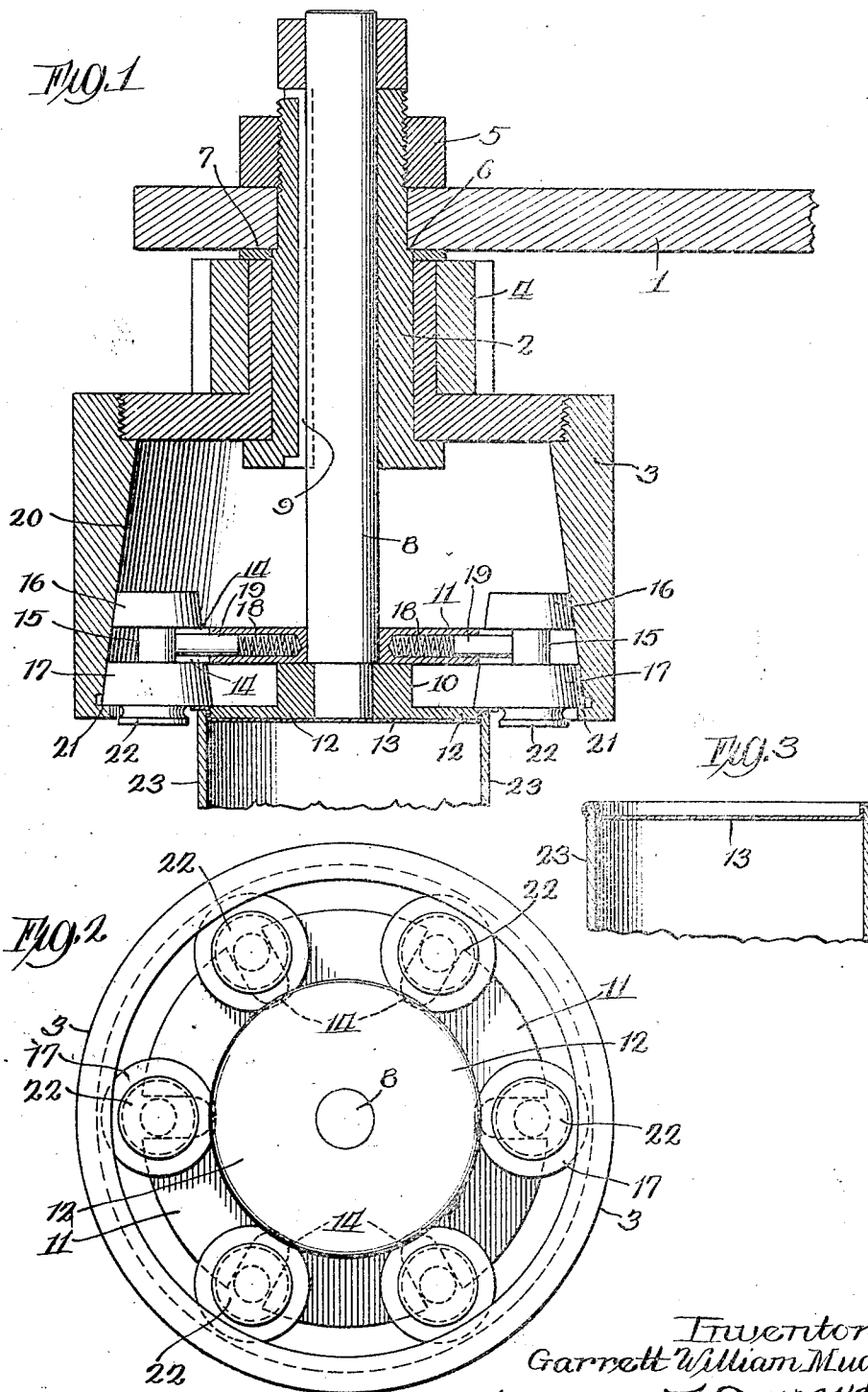
Dec. 29, 1925.

1,567,074

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CAN SEALING MACHINE

Filed Oct. 27, 1923



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## UNITED STATES PATENT OFFICE.

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## CAN-SEALING MACHINE.

Application filed October 27, 1923. Serial No. 671,116.

*To all whom it may concern:*

Be it known that I, GARRETT WILLIAM MUDD, a citizen of the United States, and resident of Chicago, Cook County, Illinois, have invented a certain new and useful Improvement in Can-Sealing Machines, of which the following is a specification.

This invention relates to machinery for fastening can covers in place, either the top cover or the bottom cover, in order to seal either the top or bottom. The can cover, of sheet metal, is ordinarily crimped or swaged around its edge, in order to fasten its edge portion to the rim or upper edge of the can. This has been done in various ways, but the machinery and the methods employed have not been free from objection, and have not been altogether satisfactory.

Generally stated, therefore, the object of this invention is to provide a novel and improved construction and arrangement whereby the can remains stationary, during the sealing operation, while either the top cover or bottom cover is secured in place, and is not revolved or rotated, and whereby there is no danger of expelling the contents, such as liquid, when the top cover is sealed in place, after the can is filled, as is often the case when machinery is used which requires rotation of the can during the sealing operation, and to ensure other beneficial results in the construction and operation of machinery of this kind.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and the desirability of a can cover sealing machine of this particular character.

To the foregoing and other useful ends the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings in which—

Figure 1 is a vertical section of a can cover sealing machine embodying the principles of the invention, showing the upper portion of the can in position, with the cover thereon, ready to be crimped or swaged around its edge to fasten it in place on the top of the can.

Figure 2 is a bottom view of the rotary sealing head constituting the sealing mechanism shown in Figure 1.

Figure 3 is a vertical section of the upper portion of the can and the cover after the

latter is crimped at its edges and sealed in place.

As thus illustrated, the invention comprises a support 1 to which is fastened the sleeve 2 upon which is rotatably mounted the inverted cup-shaped member 3, the latter having a pinion 4 on its upper portion. The nut 5 screwed upon the upper portion of the sleeve 2 clamps the latter tightly to the support 1, the sleeve having a shoulder 6 to engage the bottom of said support. A washer 7, of suitable material, is interposed between the top of the pinion 4 and the bottom of said support, in the manner shown. The central and vertically disposed axis member 8 has a spline 9 by which it is keyed to the sleeve 2, so that this axis member can slide up and down but cannot rotate. The lower end of the axis member 8 is provided with an enlarged portion 10 forming a shoulder upon which the rotary disk 11 is free to rotate, and below this portion 10 the axis member 8 has an integral flat portion 12 which rests upon the top of the can cover 13, as shown in the drawings. The disk 11 is provided with radial slots 14 for the axes 15 of the tapered rolls 16 and 17, and springs 18 and plungers 19 actuated by said springs tend normally to force the axes 15 and their tapered rolls outward against the upwardly tapered interior surface 20 of the inverted cup-shaped member 3 previously mentioned. The rolls 17 normally rest on the shoulder 21 formed at the lower edge of the inverted cup-shaped member 3, and the bottoms of these rolls are provided with grooved extensions 22 for engagement with the edges of the can cover.

The mode of operation is as follows: When the pinion 4 is rotated, by any suitable power transmitting means, the inverted cup-shaped member 3 is rotated, and this will rotate the rolls 16, causing the latter to revolve around the axis member 8 while they are rotating about their individual axes, and the speed at which these rolls revolve about the axis member 8 will be about half the speed of rotation of the inverted cup-shaped member 3, in a manner that will be readily understood. The can 23, with its cover 13 in place, is pressed upward against the non-rotary flat portion 12 of the axis member 8, as shown in Figure 1, and continued upward pressure and movement of the can will carry the axis member 8 and the rolls 16 and 17

upward. As the inner surface 20 of the inverted cup-shaped member 3 is upwardly tapered, it follows that the upward movement of the can and of the rolls will cause the latter to be gradually forced toward the axis member 8, thereby causing the grooved portions 22 to have the desired action on the edges of the can cover. The portions 22 are so formed that they roll the can cover edges downward and then inward, whereby the edges are crimped as shown in Figure 3, and swaged into the upper portion of the can, which latter may be of paper or fiber or of any other material.

Thus the can is stationary while the rolls 16 and 17 are revolving around it, so that the can is not rotated, and hence there is no danger of the contents of the can, such as liquid, being expelled by centrifugal force from the top of the can. When the cans are rotated, for the sealing thereof, it is found that the contents often are thrown outward, sometimes to the discomfort and danger of the persons operating the machine; but with the improved construction and method shown and described there is no such possibility or danger, inasmuch as the can is held against rotation, and is simply moved upward to cause the sealing or swaging rolls to have the desired action on the edges of the cover. The spline 9, of course, permits the axis member 8 to move up and down, but prevents it from rotating.

It will be understood that any suitable known or approved means can be employed for supporting the can. In other words, any suitable support, which will hold the can in position for upward movement, will serve the purpose and inasmuch as can holding devices for this purpose, for use in connection with sealing machines, are common, it will not be necessary to show or describe any such means. But in any event, as previously explained, the can merely moves upward, for the sealing operation, and does not rotate, for instead the sealing means rotates, causing the sealing rolls to revolve around the can; and this overcomes some of the objections and difficulties that have been found to be practically unavoidable when the can is rotated, instead of rotating the sealing means, as is true of certain machines and methods heretofore employed for sealing cans by rotation of the can itself.

It is obvious, of course, that the cover which is being secured in place, as shown in the drawings, and as heretofore described, and as hereinafter specified in the claims, may be either the top cover or the bottom cover. In either case, however, regardless of whether it is the top cover or the bottom cover which is being secured in place to the can body, it is true that the machine is practically entirely free from lateral thrust on the axial parts thereof. For example, the

lateral thrust is balanced on the axis member 8, and on the member 2, by the use of a plurality of crimping or swaging rolls around the circumference of the can, and the lateral thrust is also balanced on the axes of the rolls themselves, inasmuch as these rolls bear against the member 3 and are pushed by this member against the edges of the can cover, to produce the desired result. Necessarily, therefore, there are at least two oppositely arranged rolls for this purpose, and preferably not less than 3, although any suitable or desired number can be employed without departing from the spirit of the invention, but whatever the number, they are preferably equidistant or spaced equally or uniformly around the can, so that their points of contact with the can are equidistant on the circle. Friction is thus lessened or minimized, and the machine is intended for long and continued use without injurious wear, and without getting out of order. The lateral pressure, or lateral thrust, is also balanced on the can itself, for the pressure of the rolls at one side is counterbalanced by the pressure of the rolls at the other side. Consequently, of course, the action of the bending or crimping rolls does not tend to push the can laterally out of place.

What I claim as my invention is—

1. In a can sealing machine, the combination of non-rotary means for holding the cover down on the can, so that the can does not rotate, and revolving instrumentalities for engaging and swaging the edge portions of the cover to fasten the cover in place on the can, said revolving means being movable upward to force them toward the axis of rotation, thereby to bend the edge portions of the cover in the desired manner.

2. In a can sealing machine, the combination of non-rotary means for holding the cover down on the can, so that the can does not rotate, and revolving instrumentalities for engaging and swaging the edge portions of the cover to fasten the cover in place on the can, said instrumentalities comprising a member which rotates about a vertical axis, upwardly tapered rolls which are carried by said rotary member and which are movable toward and away from the axis of rotation, springs carried by said rotary member to normally force said rolls outward, and rotary means for engaging said rolls to cause them to revolve and at the same time to rotate about their individual axes.

3. A structure as specified in claim 1, said instrumentalities comprising rolls which revolve around the can, in contact with the edges of the cover, and means for causing said rolls to thus revolve and at the same time rotate about their individual axes, so that the rolls are each rotated while revolving around the can.

4. A structure as specified in claim 1, comprising a rotary member, a bearing for said member, and the crimping or swaging means operated by said member, disposed in position to revolve about the axis of said member, and arranged equidistant relatively to the work upon which they are operating to balance the lateral thrust on said member, thereby to reduce the friction of said member in its bearing.

5. A structure as specified in claim 1, comprising the rolls arranged at points around said can to balance the pressure thereon, and means for revolving said rolls, also free from lateral thrust because of the disposition of said rolls.

6. A structure as specified in claim 1, comprising the crimping or swaging means being arranged to balance the lateral pressure on the can, and instrumentalities for revolving said crimping means.

7. A structure as specified in claim 1, comprising an axis member, the bending means carried by said axis member to produce the desired action on the can, and the means for revolving said bending means about the axis of said member, said bending means being disposed in position to balance the lateral thrust on said member and the axis thereof.

8. A structure as specified in claim 1, comprising the plurality of sealing rolls disposed in position to prevent lateral displacement of the can by the action of said rolls, and the means for revolving said rolls to produce the desired sealing action.

9. In a machine for sealing either end of a can, or for at least sealing one end thereof, the combination of revolving means to produce the desired crimping or swaging action, thereby to close the end of the can being operated upon, and means whereby the lateral thrust is balanced, thereby to balance the lateral thrust on the can, and to balance the lateral thrust on the axial parts of the machine as well, said crimping or swaging means comprising a plurality of rolls disposed at equidistant points around the can, and said balancing means comprising instrumentalities to engage said rolls to relieve their axes of lateral thrust outwardly and radially of the axis about which they revolve.

10. A structure as specified in claim 9, said rolls so disposed that pressure of the roll at one side is counteracted and balanced by pressure of another roll at the opposite side.

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