July 11, 1933. R. B. TAYLOR 1,918,004

MACHINE AND METHOD FOR REMOVING DENTS FROM FILLED CANS

Filed Nov. 20, 1931

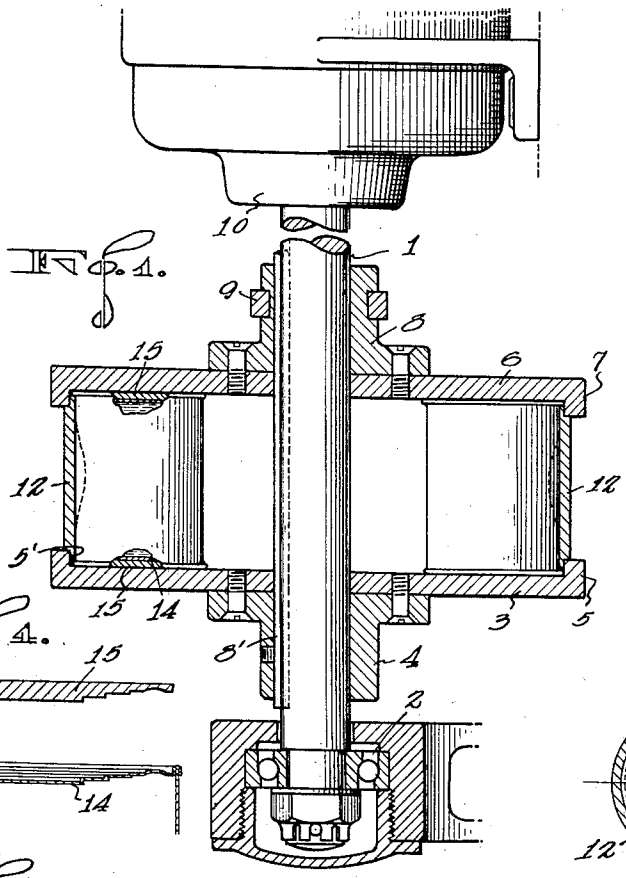


Fig. 1.

Fig. 4.

Fig. 3.

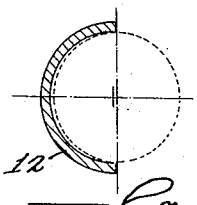


Fig. 3a.

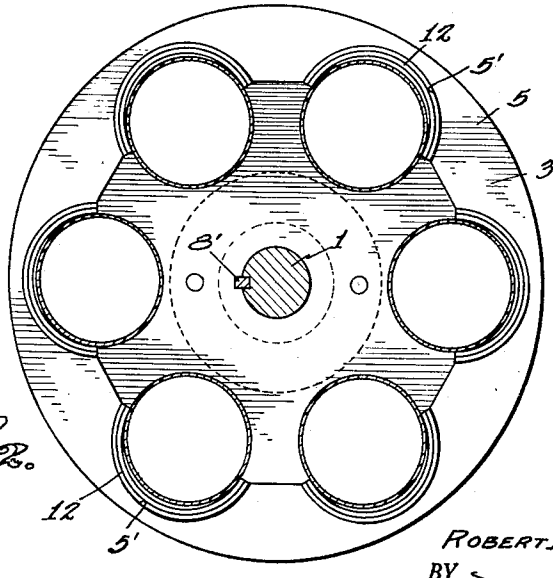


Fig. 2.

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Patented July 11, 1933 1,918,004

UNITED STATES PATENT OFFICE

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MACHINE AND METHOD FOR REMOVING DENTS FROM FILLED CANS

Application filed November 20, 1931. Serial No. 576,354.

The present invention relates to improvements in a process of and means for removing dents from filled cans. In any cannery, there are frequent accidents of various kinds to the cans after the latter have been filled and the tops have been closed, and it frequently happens that, due to dents made in the cans, they are rendered unfit for sale as a regular standard article and have to be sold as an inferior product, if they can be disposed of at all. The tendency of cans to become dented is increased by the partial vacuum that exists in the cans.

It is the principal object of the present invention to provide a means for straightening out these dents, which uses the principle of centrifugal force, setting up a force on the inside of the can against the wall, which has become dented, and increasing this force to the point where the wall is flattened out against a suitable shape or form, thus returning it to substantially its original condition.

The preferred form of my invention is illustrated in the accompanying drawing, in which

Figure 1 shows a vertical section through a machine made in accordance with my invention;

Figure 2 shows a plan view of the machine with an upper section removed; the cans being illustrated in section;

Figure 3, a detail view illustrating the fit of a can against a molding form;

Figure 4, a sectional view of a filler for the end of the can; and

Figure 5, a vertical section through the upper portion of a can.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

While the idea of utilizing centrifugal force for straightening out the wall of a can may be carried out in many different ways, I show, as the preferred form, a device comprising a shaft 1 suitably mounted with freedom of rotary motion in a bearing 2 and having an annular platform 3 fixed thereto by means of a hub section 4. The platform 3 has an annular flange 5 rising therefrom. This flange is of considerable width, as shown in the drawing, and is formed with semi-circular recesses 5′ adapted to receive forms or molds hereinafter referred to. A plate 6, corresponding in size and shape to the platform 3 and having a downwardly-extending annular flange 7 corresponding in shape to the flange 5, is slidably mounted on the shaft 1 by means of a sleeve 8, which is vertically guided on the shaft by means of a key 8′ and which may be adjusted on the shaft by any suitable means, as by the fork 9, shown schematically in Figure 1. The shaft may be rotated by means of the motor 10 or in any other suitable manner. The key 8′ holds the platform 3 and the plate 6 with their respective recesses in registry at all times.

Between the platform 3 and the plate 6, I mount a plurality of forms or molds 12, which correspond in shape substantially to the shape of the cans to be treated, but which preferably, if the cans are cylindrical in form, are made on a radius slightly less than that of the cans for which they are intended. A number of these forms, as shown in Figure 2, are interposed between the platform 3 and the plate 6 so as to rest in the recesses of the flanges 5 and 7, the recesses corresponding in shape to the molds, so that the latter are held and supported against centrifugal motion throughout their entire width. It will be understood that these forms or molds 12 may be readily exchanged to accommodate different sizes or shapes of cans.

The tops of the cans usually are not made flat but are stepped and concave as shown at 14, in Figure 5, and the contents of the can, when subjected to centrifugal motion at high speed, have a tendency to raise the top and particularly the concave central portion and to loosen the beads on the edge of the can. To avoid this, I provide suitable fillers 15, fitting the concavity of the tops and preventing any change in form of the latter. These fillers may be used at the bottom as well as on top.

The manner of using my device is as follows:

The dented cans are placed on the platform 3, fillers being interposed if required, and against the molds or forms 12 in such a manner that the dented sections of the can face toward the molds and away from the center of rotation. The fillers 15 are placed on top of the cans and the previously raised plate is lowered to firmly rest on the molds and the fillers, whereby the cans are firmly secured in place. The shaft 1 is then rotated at high speed.

This causes the cans to revolve around the center of rotation and it causes the contents of the can to be urged toward the dented section, whereby the latter is forced outwardly against the mold and is flattened to conform to the shape of the mold. As has been pointed out, the mold is built on an arc, the radius of which is slightly less than the radius of the can, thus permitting the recovery of the tin plate, due to its native elasticity after straightening of the dent, as shown in the drawing.

The centrifugal force urging the contents of the can against the dented wall has a tendency to straighten out the wall against the mold and brings it back to its normal form so as to render the article salable as a standard article.

The centrifugal motion has no damaging effect on the contents of the can since in most cases, the product in the can, such as pineapple for instance, is packed in some sort of syrup which closely approaches the specific gravity of the product itself. I have proven, for instance, by actual experience, that pineapples packed in syrup will not be damaged in any way by this procedure, notwithstanding the fragile nature of the slices in the can.

It stands to reason that the device may be easily adjusted to fit different sizes of cans by the mere substitution of different sized molds 12 between the platform 3 and the plate 6. The capacity of the machine depends entirely upon its size and the nature of its construction.

It is likely that a machine using the principle of this invention can be designed for a continuous feed and discharge to take the dent out of the cans no matter where located, but for the time being, the principal object of the present application is to protect the principle of the use of centrifugal force for furnishing pressure from the inside of the can towards the outside, so that the wall of the container may be forced against a surface of the proper shape.

I claim:

1. A machine for removing dents from cans comprising a revolvable platform having an annular flange, a cover plate adjustably mounted in coaxial relation therewith having a registering annular flange and a plurality of forms interposed between the platform and the plate and held by the flanges for forming cans bearing thereagainst when the platform is rotated.

2. The method of removing dents from a filled can which consists in imparting revolving motion to the can whereby the contents are urged against the dented section.

3. The method of removing dents from a filled can which consists in revolving the can about a center lying outside of the can and with the dented section facing away from the axis of rotation whereby the contents of the can are urged against the denting section.

4. A machine for removing dents from cylindrical cans or the like comprising a revolvable member having a semi-cylindrical mold mounted thereon with its open face turned toward the center of rotation and adapted to receive a can therein for removing dents from the outer face of the can by centrifugal force when the member is rotated.

5. A machine for removing dents from cylindrical cans or the like comprising a revolvable member having a semi-cylindrical mold mounted thereon with its open face turned toward the center of rotation and adapted to receive a can therein for removing dents from the outer face of the can by centrifugal force when the member is rotated, the mold being of a radius slightly smaller than that of the can.

6. A machine for removing dents from a can comprising a revolvable member having a semi-can-encircling mold mounted thereon with its open face turned toward the center of rotation and adapted to receive the can therein for removing dents from the outer face of the can by centrifugal force when the member is rotated.

7. A machine for removing dents from a can having concave end pieces comprising a revolvable member having a semi-can-encircling mold mounted thereon with its open face turned toward the center of rotation and adapted to receive the can therein for removing dents from the outer face of the can by centrifugal force when the member is rotated, and having means bearing on the end faces of the can with fillers for filling the concavities of the end pieces.

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