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J. BERRY

2,224,841

FIXING OR SECURING CLIPS OR DEVICES FOR SEALING CARTONS OR CONTAINERS

Filed April 29, 1938

2 Sheets-Sheet 1

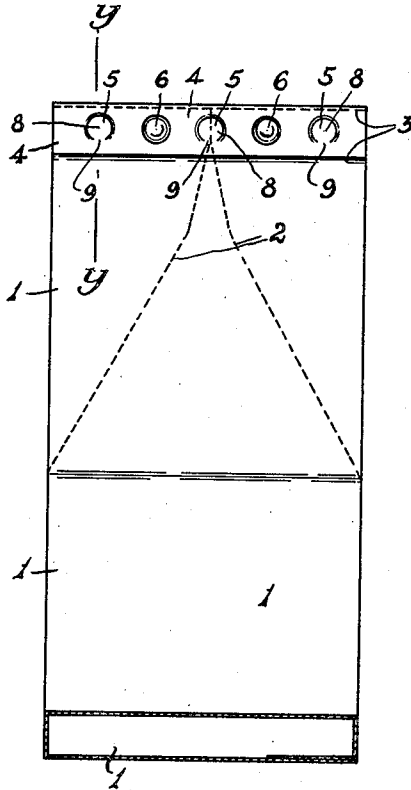


Fig. 1.

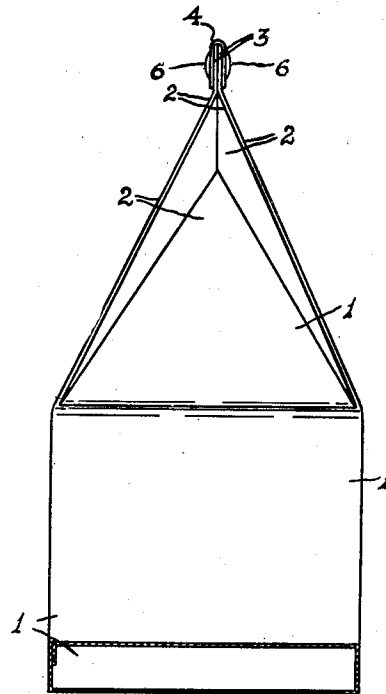


Fig. 2.

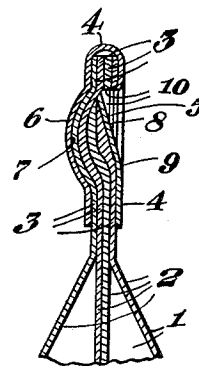


Fig. 3.

Witness:

Arthur Thompson

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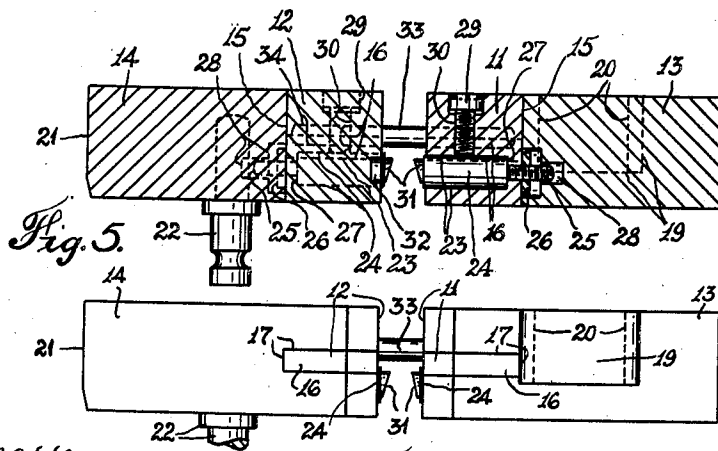
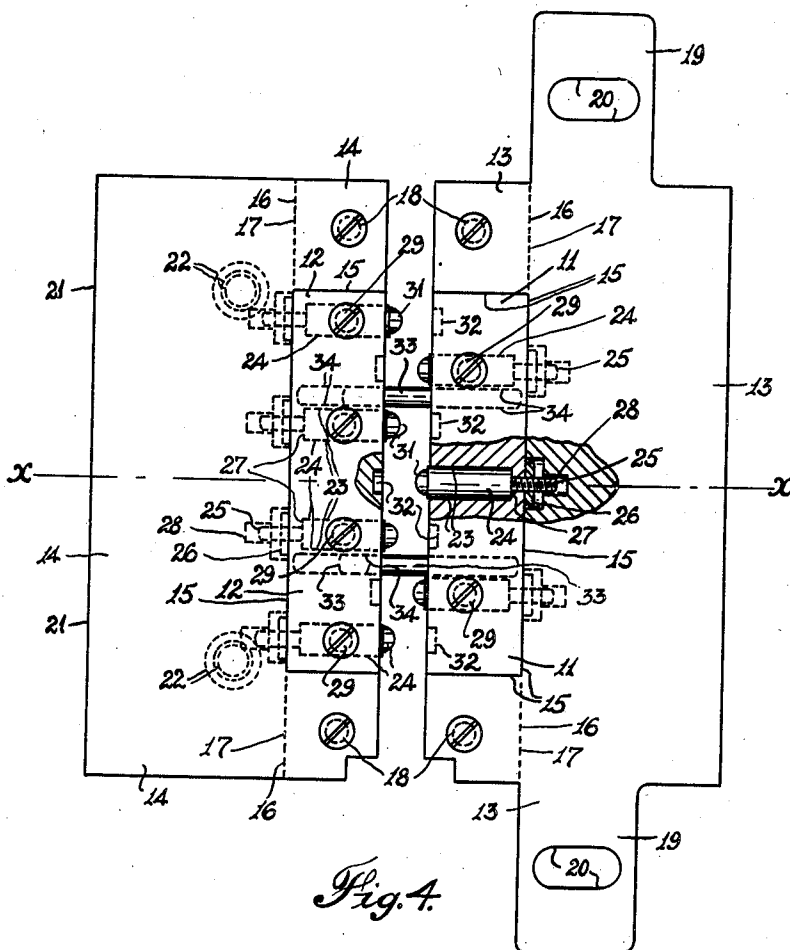
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2 Sheets-Sheet 2



Witness:

Arthur Thompson

Fig. 6.

Inventor:

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UNITED STATES PATENT OFFICE

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FIXING OR SECURING CLIPS OR DEVICES
FOR SEALING CARTONS OR CONTAINERSJohn Berry, Johannesburg, Transvaal, Union of
South AfricaApplication April 29, 1938, Serial No. 205,122
In the Union of South Africa August 25, 1937

4 Claims. (Cl. 153—1)

This invention relates to the fixing or securing of clips or devices for sealing or closing cartons or containers of the kind made of waxed cardboard or stiff paper, vegetable parchment or the like, and used principally for holding milk and other liquids.

The invention relates especially to the fixing of the clips or devices which are made of sheet metal suitably bent or doubled and applied to the folded and closed upper ends of the cartons or containers. To open the cartons or containers such clips or devices are ordinarily removed, together with a portion of the top or upper end of the carton or container, by tearing the latter off. These clips have previously been secured in position on the cartons as by grooving or corrugating them, either longitudinally or diagonally. They have proved inefficient in use as they could be removed and replaced without it being apparent that they had been taken off, thus permitting the milk or other contents of the carton to be removed, adulterated, or otherwise tampered with.

One object of the present invention is to fix or secure clips or devices for the purpose specified in such a way that they will be difficult to remove from the sealed upper end of the carton or container, and so that, after they have once been removed and the cartons opened, the re-closing and proper replacement of the clips will be impossible to accomplish.

According to the invention the bent clip or device on the one side is indented, punched or depressed in such a way that portion of the metal acted upon by the die punch or tool is cut or severed to form a tongue which forces the material of the folded or closed upper end of the carton or container into a coincident recess or cavity formed in the inner side of the other side of the clip or device.

Any suitable number of the indentations or punchings and co-operating recesses or cavities may be formed, and they may be so arranged as to alternate on both sides of the clip or device. They may be of any suitable and desired shape, such as circular, square, diamond, or rectangular, and arranged longitudinally, diagonally or otherwise, and be suitably spaced apart.

The metal round portion of the indentation or depression will be cut by the tool, preferably round more than one half thereof, to form the tongue, and the latter, by being bent about the unsevered remaining lower portion, will be forced inwards and similarly cut the material of the carton and deform and press it into the recess or cavity formed simultaneously in the inner side of

the clip at the other side thereof by the pressing action of the die punch.

The recess or cavity in the clip is formed, in the action of punching or making the indentation or depression, by a recess or hole of the requisite shape provided in the complementary part of the tool, implement or die used for fixing the clip, into which recess or hole portion of the metal of the clip is forced.

The tool or implement for punching or forming the indentations or depressions and coincident recesses or cavities according to my invention is constructed, in one form, with jaws or die plates fitted with a plurality of die punches and having alternating recesses or holes; the punches on each die plate or jaw corresponding in number and position to the recesses or holes in the other die plate or jaw. The die punches will be of the same cross-sectional shape as the indentations to be formed thereby and bevelled or inclined rearwardly from the entering or severing edge to the edge where the metal of the clip is not severed. The coincident recesses or cavities are of the required shape and size to take the material of the carton forced therein by the action of the die punches when the latter force the metal of the clip inwards.

Any suitable hand or power driven means, tool or implement may be employed for carrying and operating the jaws or die plates for fixing or securing the clips to seal or close the cartons.

In the arrangement of die plates or jaws one is fixed and the other reciprocated in relation thereto. Each die plate is provided with holes or recesses which form the counterparts of the die punches, those in the one plate being staggered in relation to those in the other plate. In each die plate a punch is provided for each of the counterparts in the other plate. The counterparts are preferably in the form of substantially cylindrical holes of suitable depth to allow the metal of the clip to be depressed therein to a sufficient depth.

The die punches are preferably of cylindrical shape in cross-section and bevelled from the top to or near to the surface of the plate at the bottom. The die punches may be tapered exteriorly in the direction of the bevelled face which provides the cutting end, so facilitating the penetration of the metal and providing for clearance to facilitate the disengagement of the die punches from the clip. The punches are somewhat smaller than the recesses or counterparts so that they operate to sever the metal of the clip and then to push the severed part inwards, together with

the material of the carton which is gripped by the clip, into the counterparts or recesses and so form the coincident projections on the clip in which the cavities are formed.

5 The die plates may be suitably secured in a framework comprising a preferably adjustable carrier for the stationary die plate and a movable carrier for the other and movable die plate. The movable carrier may be reciprocated by suitable
10 means, such as lever-actuated cam means and retracting spring means. Means are provided and combined with the die carriers and their actuating means to bring the upper edges of the carton together and to apply the clip so that it
15 can be acted upon by the dies to seal the carton. There is also preferably provided means which feed the clips separately between the die plates above the carton closing means, in which position they are engaged by the upper edges of the
20 carton when it is raised.

A clip or device fixed according to the invention cannot be easily removed, and, if removed and the carton opened, the upper end of the latter is so badly torn or damaged as to prevent
25 proper replacement of the clip on the carton.

The invention will be further explained in connection with the accompanying drawings, in which

30 Fig. 1 is a front elevation of portion of a carton or container closed according to the invention.

Fig. 2 is a view at right angles to Fig. 1.

Fig. 3 is an enlarged detail cross-sectional view taken on the line X—X of Fig. 1 of the upper
35 portion of the carton showing the sealing clip in operative position on the collapsed upper edges of the carton.

Fig. 4 is a plan view of the die plates and their carriers.

40 Fig. 5 is a section of Fig. 4 on line X—X, and Fig. 6 is an end elevation of the die plates and their carriers.

Referring to Figs. 1 to 3 of the drawings, the numeral 1 denotes the carton or container, the upper portion 2 of which is folded or collapsed to provide the engaging upper edges 3 to which
45 the sealing or closing clip 4 is applied. The clip 4, as shown, preferably, as is usual, extends the full length of the engaging upper edges 3. The clip is caused tightly to embrace the upper edges
50 3 for its full width.

5, 6 in Fig. 1 denote the alternating indentations or depressions, and projections formed by the internal recesses or cavities 7—see also Fig. 3. The tongues, or those portions 8 of the clip 4
55 which are partially severed and pushed inwards to form the depressions 5, are bent inwardly about their lower unsevered portions 9, and the action of pushing or forcing them inwards cuts or severs the material of the carton 1 around the severed
60 portion of the clip, as indicated at 10, and forces the severed material into the internal recesses or cavities 7 formed opposite the tongues 8 and compacts the same therein.

65 Referring now to Figs. 4 to 6 of the drawings, in which the jaws or die plates and their carriers are illustrated, 11, 12 are the die plates which are detachably fixed to their respective carriers 13,
70 14. The die plates 11, 12 are fitted in recesses 15 in the opposing faces of the carriers 13, 14, and the die plates 11, 12 are constructed at the ends with projections 16 which engage in slots 17 beyond the recesses 15. 18 are screws for fixing the projections 16 in the slots 17.

75 The fixed die carrier 13 is constructed with

extensions or lugs 19, in which are formed elongated slots 20 for adjustably securing it to the frame of the tool or implement.

The other and relatively movable die carrier 14 is adapted to be advanced in the direction of
5 the fixed die plate 11 and carrier 13, as by cam means engaging with the back face 21 of the carrier 14, and to be retracted by spring means connected to the carrier 14 through the medium of
10 grooved pins 22 fixed in the underside thereof.

Each of the die plates 11, 12 is constructed with a plurality of cylindrical holes 23 in which are arranged the die punches 24, the latter being constructed with screw-threaded extensions
15 25 to receive fixing nuts 26. The nuts 26 and extensions 25 serve for securing the die punches 24 against the shoulders 27 at the bottom of the holes 23 after they have been placed in correct position. The nuts 26 and extensions 25 are
20 accommodated in recesses 28 in the carriers 13, 14. The punches 24 are further secured or locked in position against rotation by means of screws 29 fitted in screw-threaded holes 30 in the die plates 11, 12. The portions 31 of the punches
25 24 which project beyond the die plates 11, 12 are reduced in diameter and bevelled downwardly or from the top to the bottom so that they will operate to sever the portions of the clip 4 to form the substantially circular tongues 8 and force the same inwards, as shown in Fig. 3.

In each die plate 11, 12, opposite each of the die punches 24, is formed a cylindrical recess or hole 32 whose function is to receive the portion
30 of the clip 4 which is pressed outwardly therefrom to form the projection 6 made by the respective recess or cavity 7. As the movable die plate 12 is advanced or moved in the direction of the stationary die plate 11 the die punches 24 act to form the bevelled depressions 5 by penetrating and severing the clip 4, so forming the
40 tongues 8 and forcing the same inwards. Simultaneously the die punches 24, through the medium of the tongues 8 and the compacted material of the carton 1, force the metal of the clip 4 into the opposing recesses or holes 32, thereby forming the internal recesses or cavities 7 and the projections 6 made thereby.

33 are pins arranged in the stationary die plate 11, which pins 33 are adapted to engage in coincident holes 34 in the movable die plate 12 and serve as stops or gauges for the upper edge of the clip 4 when the carton 1 is placed in position to be operated upon by the dies. The pins 33 will also serve as guides to ensure proper register of the die plates 11, 12, and the die punches 24 and
55 co-operating opposing recesses or holes 32.

The die plates are shown made of such a length that they can also be used for fixing clips longer or shorter than those shown in Figs. 1 and 2.

What I claim as my invention and desire to
60 protect by Letters Patent is:

1. The method of fixing U-shaped sealing clips on the upper edges of containers which consists in forming a plurality of indentations in the metal of one side of the clip, cutting the metal
65 through partially round said indentations to form tongues on one side of the clip and simultaneously bending said tongues inwardly, restraining the other side of the clip against outward movement around the areas subjected to the
70 bending forces, and cutting the material of the container and forcing it forward by bending the tongues to form and fill cavities in the inner side of the other side of the clip coincident with said indentations, as set forth.

2. The method of fixing U-shaped sealing clips on the upper edges of containers which consists in forming a plurality of indentations in the metal of one side of the clip, cutting the metal
5 through partially round said indentations to form tongues on one side of the clip and simultaneously bending said tongues inwardly, restraining the other side of the clip against outward movement around the areas subjected to
10 the bending forces, cutting material of the container and forcing it forward by bending the tongues to form and fill cavities in the inner side of the other side of the clip coincident with said indentations, similarly forming tongues on the
15 other side of the clip alternating with the first-mentioned cavities, and similarly bending the last-mentioned tongues to form cavities alternating with the first-mentioned tongues, as set forth.

20 3. The method of fixing U-shaped clips on the collapsed upper edges of containers, which consists in forming depressions in the metal of one side of the clip, cutting or severing the clip round the depressions to provide tongues, bend-

ing said tongues inwardly to force material of the container forwardly while restraining the other side of the clip against outward movement around the areas subjected to the bending forces, and simultaneously forming coincident recesses
5 in the inner side of the other side of the clip, as set forth.

4. The method of fixing U-shaped clips on the collapsed upper edges of containers, which consists in forming depressions in the metal of one
10 side of the clip in such a way that the clip is cut or severed round the depressions to provide tongues, bending said tongues inwardly so as to impart an inward bevel to the depressions, restraining the other side of the clip against out-
15 ward movement around the areas subjected to the bending forces, cutting the material of the container round the edges of the tongues by bending the tongues, and forcing material of the container forwardly simultaneously to form co-
20 incident recesses in the inner side of the other side of the clip, as set forth.

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