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CAN OPENER

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Fig. 2.

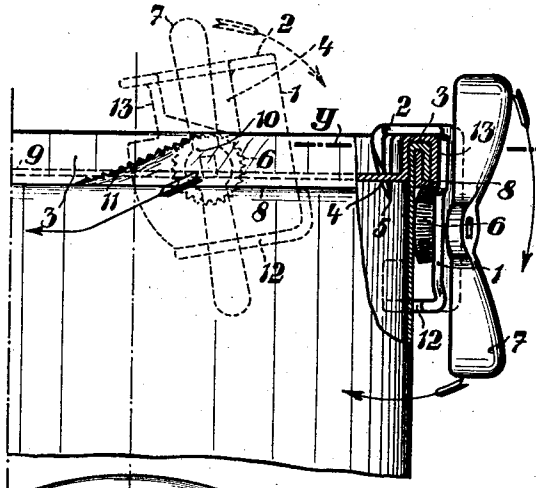


Fig. 3.

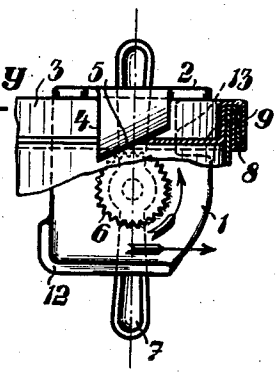


Fig. 1.

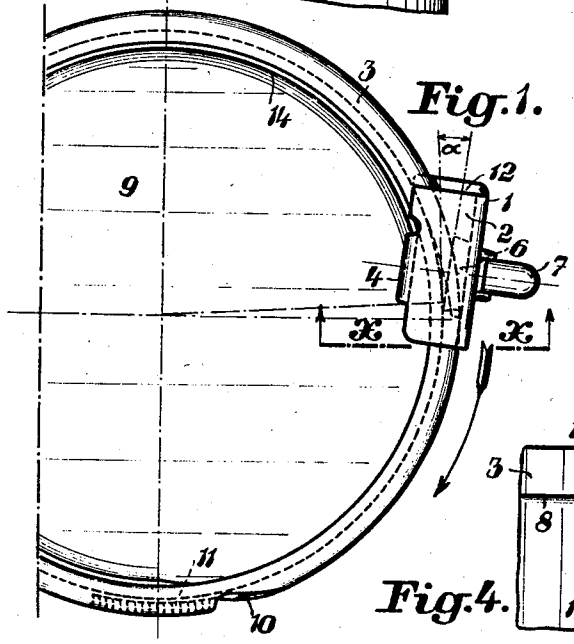


Fig. 5.

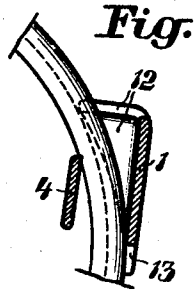
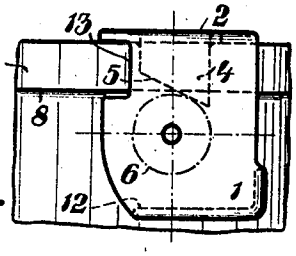


Fig. 4.



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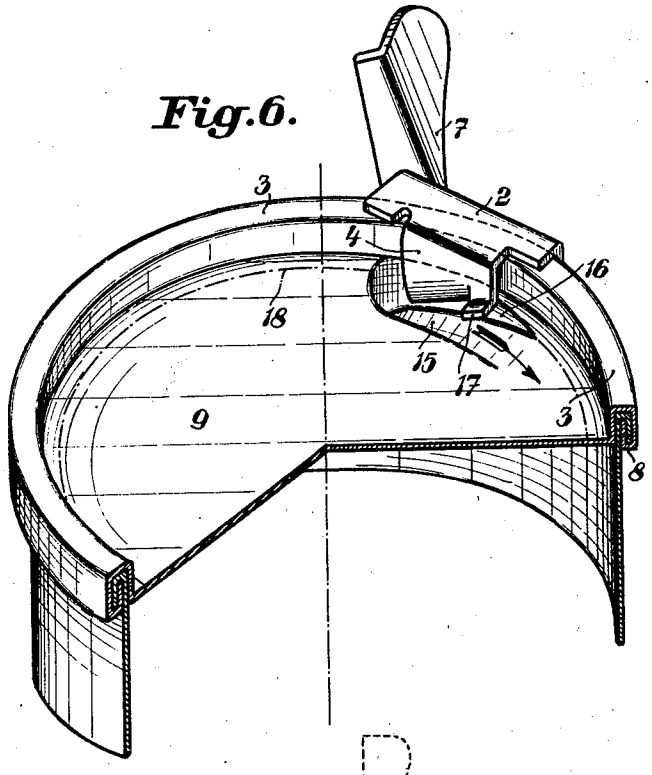
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Fig.6.



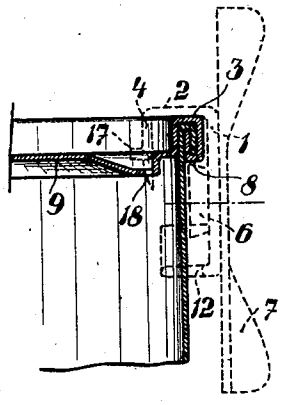


Fig.7.

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Fig. 8.

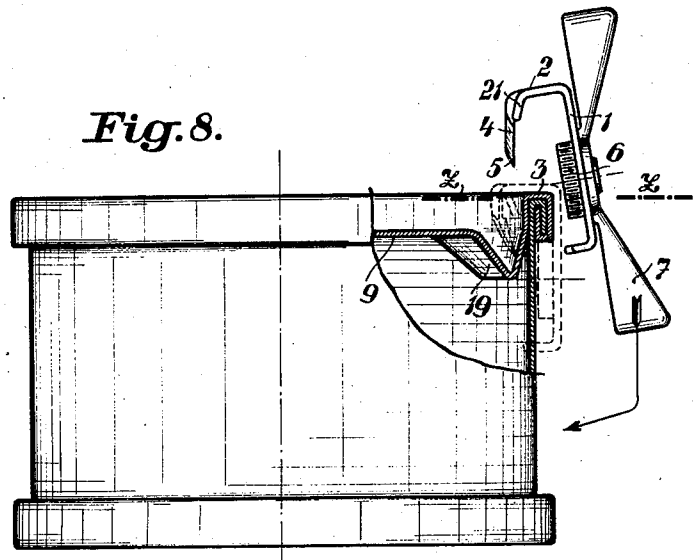
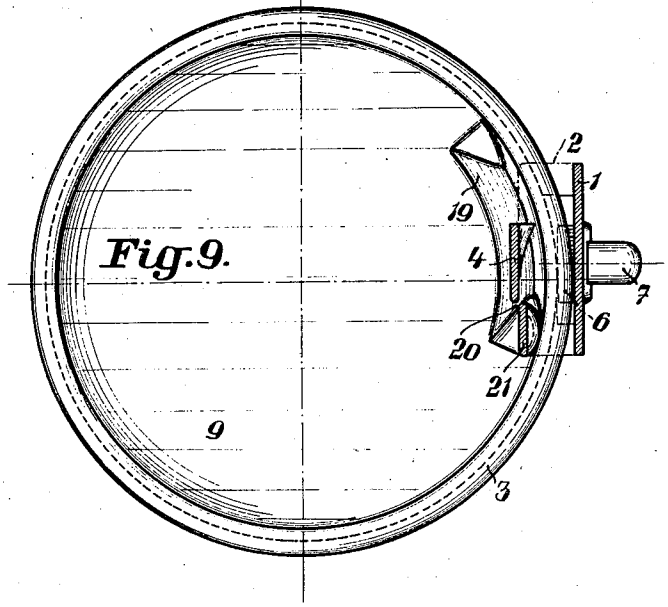


Fig. 9.



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Fig. 10.

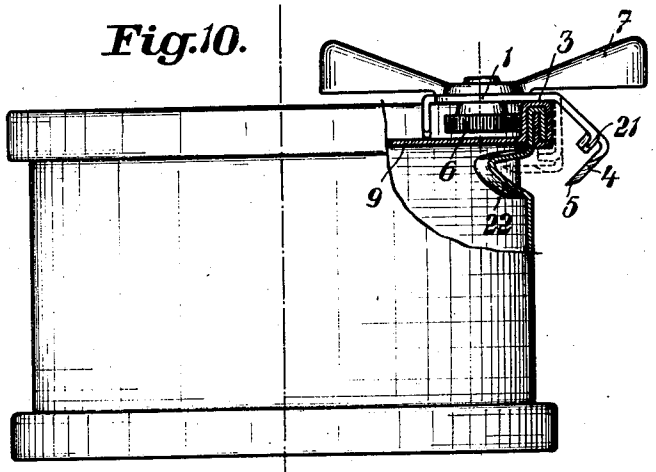
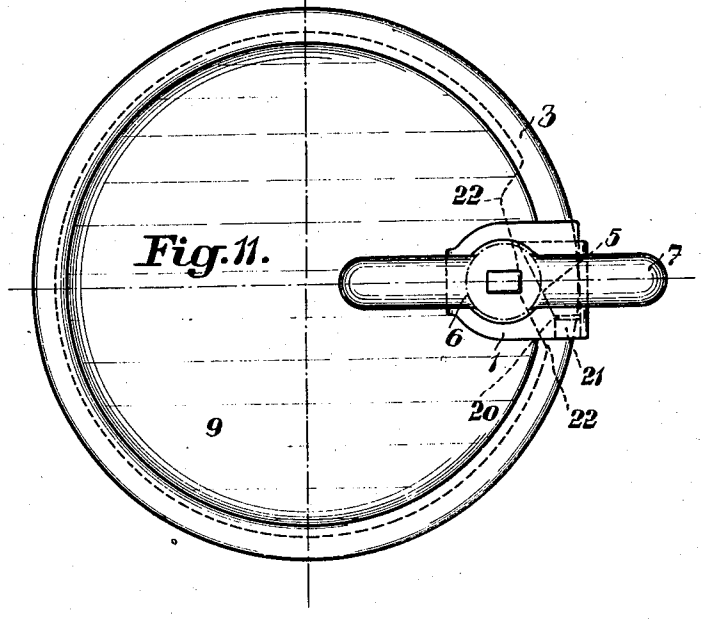


Fig. 11.



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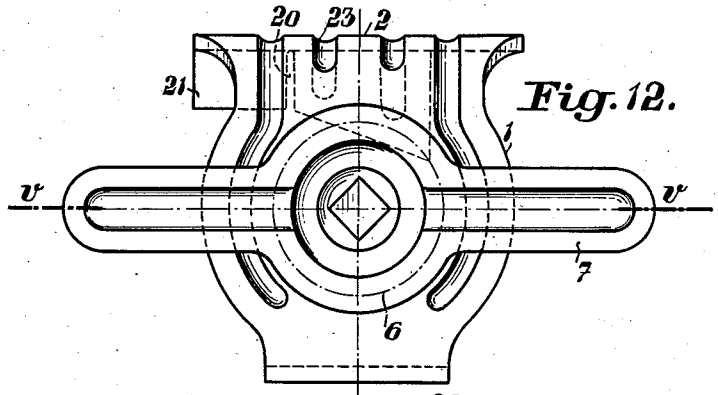


Fig. 12.

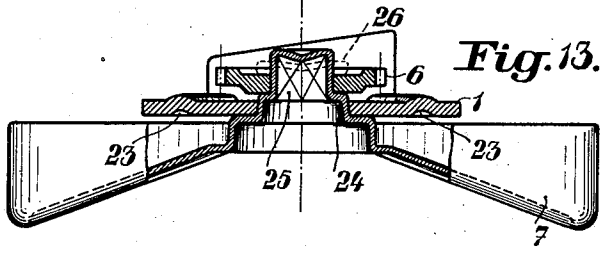


Fig. 13.

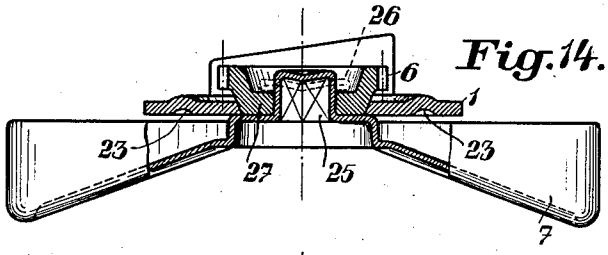


Fig. 14.

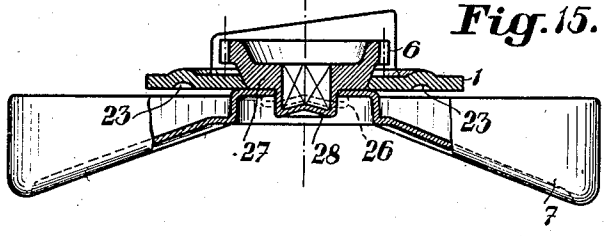


Fig. 15.

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Patented Dec. 10, 1935 2,023,744

UNITED STATES PATENT OFFICE

2,023,744

CAN OPENER

Bohumil Polák, Prague, Czechoslovakia, assignor to the firm Grodetzky & Polák, Prague, Czechoslovakia

Application May 25, 1932, Serial No. 613,499
In Czechoslovakia March 16, 1932

5 Claims. (Cl. 220—48)

Can-openers are known in which a cutter guided along the rim of the can is moved by means of a pulling wheel rolling on the under side of the can rim and cuts open the top of the can. In these can-openers either the cutter or the pulling wheel is arranged on a lever rockably supported on the carrying shield of the opener, the two limiting positions of which determine the maximum and minimum distances of the cutting edge from the periphery of the pulling wheel. This measure is necessary in the known opener, on the one hand for the purpose of enabling it to be mounted on the can in such a way that the cutter is on the inside of the rim of the can and the pulling wheel is located underneath the said rim, and on the other hand in order to force the cutter into the top of the can when rocking the lever and thereby adjusting the said distance to a minimum, and in order to press the pulling wheel against the under side of the rim of the can. Now when the pulling wheel is rotated it pulls the entire opener with it by rolling along the under side of the can rim, and the cutter cuts the top of the can open.

These box-top openers have therefore, owing to the arrangement of the rocking levers, the characteristic of a complicated kitchen utensil.

The object of this invention is to construct the can-opener so simply that it can be associated with the cans as a handy cutter, like the lid-lifters for cream cartons, by arranging the cutter and also the pulling wheel in a stationary position on the carrying shield. This measure, however, requires a special formation of the can, for the purpose of keeping the distance of the parts of the can that are concerned in the action of the cutter and of the pulling wheel from one another so great, at that position on the can which is intended for the mounting of the can opener, that it will be possible to mount the opener on the can. This formation of the can consists in a suitable depression or indentation in the top or in the rim of the can or in both. If the cutter is to make the cut in the peripheral part of the can, so that the top and the rim are severed from the periphery, this depression may be provided on the periphery of the can. The opener, mounted on the can at this point and pressed against the can, can therefore be brought, merely by rotating the pulling wheel, into the cutting position, in which definite parts of the can are nipped between the cutter and the pulling wheel.

The invention also provides means for connecting the opener, mounted on the can at the starting point, with the can itself, in such a way that only the rim of the can is nipped in the carrying shield of the opener, without the cutter being inserted in the part of the can to be cut open. This result is obtained by diminishing the distance between the cutter and the pulling wheel, measured in the axial direction of the pulling wheel, by deforming the carrying shield of the opener, after mounting the latter on the can at the starting point. The pulling wheel is thereby brought into its working position in relation to the surface of the can rim, so that the opener cannot be removed even by tilting the rim of the can, and is kept pressed against the latter. It is therefore possible to transport the can with the opener, without any risk of the opener changing its position into a vertical direction owing to external influence and thereby enabling the cutter to pierce the can.

Various constructional examples of the can opener according to the invention are illustrated in the accompanying drawings, in which

Figures 1 to 5 show one constructional form, Figure 1 being a plan of the opener and of a can with the top already partly cut open,

Figure 2 a section on the line *x*—*x* in Figure 1,

Figure 3 a view of the opener looking from the cutter side,

Figure 4 a front view of the carrying shield of the opener, and

Figure 5 a section of the carrying shield on the line *y*—*y* in Figure 2.

Figures 6 and 7 show the second form of construction in perspective and in sectional elevation respectively.

Figures 8 and 9 show another form of construction of the can-opener, which in Fig. 8 is shown in elevation, with a section at the mounting point, and with the can-opener shown in end elevation in its original shape, while

Figure 9 is a section on the line *z*—*z*, with the opener in its operative position.

Figures 10 and 11 show a fourth constructional form, Figure 10 showing a can in elevation, and in section at the mounting point, with an end view of the opener mounted loosely thereon, and

Figure 11 showing a plan of the can with the can-opener gripped on the mounting point of the can.

Figure 12 is a front view of the opener on a larger scale, while

Figures 13, 14 and 15 show sections on the line *v*—*v* in Figure 12 of various constructional forms of the bearing for the pulling wheel, and its connection with the handle.

The can-opener consists of a carrying shield 1, which is bent to a U-shape at its upper end. The transverse bridge-piece 2 of this U-shaped profile bears upon the upper side 3 of the rim of the can, while the inner flange 4 of the U-shaped profile is sharpened to form a cutting edge 5. On the carrying shield 1 is arranged a pulling wheel 6, the shaft of which is journalled in the carrying shield and is rigidly connected with a handle 7.

As the pulling wheel 6 rotates, and in so doing rolls along the under side 8 of the rim of the can, the cutter 5 cuts open the top 9 of the can in a known manner.

In this constructional form the rim of the can has a peripheral depression or indentation 10, of which the lateral boundary wall facing the direction of movement of the pulling wheel is formed by a more or less steep ramp 11 pressed in on the under side of the rim and merging at its lower end into the under side of the rim. It is, therefore, possible to place the opener on the can in the manner indicated in broken lines in Figure 2. This ramp is preferably ridged or toothed, so that as the pulling wheel revolves and rolls along the ramp 11 the carrying shield is lowered and the cutter 5 is forced into the top 9 of the can.

In order to ensure constant contact of the pulling wheel with the under side of the rim of the can the pulling wheel is subjected to a pressure directed towards the interior of the tin. This is obtained by providing the carrying shield 1 with a guiding lug 12 sliding on the periphery of the tin, and with a marginal notch 13 in its leading edge in the region of the cam rim, thereby giving the pulling wheel such a position that its plane forms an angle α (Figure 1) with the tangent to the peripheral surface of the can at the cutting point. The cutting edge 5 (Figure 1), standing at the same inclination, in producing the cut 14, steadily presses the pulling wheel against the peripheral surface of the can.

In the form of construction illustrated in Figures 6 and 7 the top 9 of the can is provided with a more or less steep depression or indentation 15 extending in the direction of movement of the pulling wheel. The side 16 of this indentation adjacent to the rim of the can is preferably eccentric, in order to give the pulling wheel a certain pull in a radial direction towards the periphery of the can and to determine the position of the cut 18 produced by the cutter. In this constructional form the cutter 4 may be provided with a guiding shoe 17 at its leading end.

In this case also the mounting of the opener upon the rim of the can is possible, and the result is obtained that when the pulling wheel is rotated the cutter is guided up the ascending bottom of the indentation 15 and draws the pulling wheel towards the under side of the rim. The resistance to cutting maintains the pulling wheel in this position.

The measures adopted on the cans illustrated in Figures 1, 2 and 6 may be employed in combination, in order to moderate the deformations of the various parts of the can.

In the constructional form illustrated in Figures 8 and 9 the top 9 of the can is provided, at the position intended for the putting on of the opener, with a depression or indentation 19, which is so deep that the cutter of the opener, bearing in the working position on the rim of the can and held fast, still remains out of contact with the material of the top.

The transverse bridge-piece 2 of the carrying shield is so broad that the opener can be mounted upon the rim of the can, or in other words the distance of the flange 4 of the U-shaped profile, constructed with a cutting edge 5, from the little pulling wheel 6, measured in the axial direction of the wheel, is so great that the opener can be mounted astride of the rim of the tin without any difficulty.

The opener can therefore easily be set up on the can rim in such a way that the transverse bridge-piece 2 of the U-shaped profile bears upon the rim 3 of the can. The opener is only connected firmly with the can by deforming the carrying shield, in which deformation the aforementioned distance between the cutter and the pulling wheel is diminished in such a way that the pulling wheel obtains a hold on the under side of the can rim, as shown in broken lines in Figure 8.

This deformation of the carrying shield is effected in a simple manner by means of a pressing implement, for instance pincers or pliers, and effects for example the narrowing of the U-profile by pressing the flange 4 against the side of the indentation 15. Preferably there is provided before the flange 4 a lug 21, which is separated from the latter by a gap 20, shown in Figure 9, and which, by pressing against the inside of the can rim 3, can also firmly connect the opener with the rim of the can.

In the form of construction illustrated in Figures 10 and 11 the top, together with the rim of the tin, is cut away from the peripheral part of the tin. For this purpose it is necessary for the indentation 22 to be provided in the periphery of the tin, and for the little pulling wheel 6 to be pressed against the inside of the box rim after the opener has been put on. This is accomplished in the same manner as in the case of the constructional form first described. In this form of construction also, by deforming the carrying shield, the opener is so firmly connected with the can that it can only be moved along the rim of the can by rotating the pulling wheel.

The forms of construction illustrated in Figures 12 to 15 are designed with a view to making the manufacture of the opener as simple as possible, and to making the opener strong while employing thin or weak material.

It is common to all these constructional forms that the transverse bridge-piece 2 of the carrying shield is provided with pressed ribs 23, which also extend over the vertical flanges of the U-shaped profile of the carrying shield, and, on the cutter flange 4, extend nearly to the cutting edge 5.

According to Figure 13 there is drawn out of the handle 7 a hollow pivot 24 and a square hollow stud or rivet 25, upon which the pulling wheel 6 is mounted. The latter is secured by forming a rivet head 26 on the stud 25.

According to Figure 14 a hollow bearing journal 27 located within the carrying shield 1 is drawn out of the pulling wheel 6, and the square hollow stud or rivet 25 is drawn out of the handle 7; while according to Figure 15 the bearing journal 27 and a hollow stud or rivet 28 are drawn out of the pulling wheel.

What I claim is:—

1. In combination, a can for preserves and the like and a can opener for cutting it open, the can comprising a rim around the top and being formed with a depression, the said opener being mounted on the rim in an idle position determined by the said depression suitable for trans-

port and readily shifted from the idle position into the cutting position, the said can opener comprising a carrying shield of U-shaped cross section engaged over the rim of the can, a cutting blade integral with one arm of the U-shaped carrying shield, a pulling wheel journalled in the other arm of the said carrying shield the cutting blade and the pulling wheel being in substantially parallel planes, and the pulling wheel being adapted when rotated to roll around the rim and drive the cutting blade through the material of the can, and means for manually rotating the pulling wheel.

2. In combination, a can for preserves and the like and a can opener for cutting it open, the can comprising a rim around the top and being formed with a depression, the said opener being mounted on the rim in an idle position determined by the said depression suitable for transport and readily shifted from the idle position into the cutting position, said can opener comprising a carrying shield of U-shaped cross section engaged over the rim of the can, a cutting blade integral with one arm of the U-shaped carrying shield, a pulling wheel rotatably mounted on the other arm of the carrying shield, the cutting blade and the pulling wheel being in substantially parallel planes, and the pulling wheel being adapted when rotated to roll around the rim and drive the cutting blade through the material of the can and a handle for manually rotating the pulling wheel, a hollow journal for rotatably supporting the pulling wheel and the handle.

3. In combination, a preserve can or the like comprising a body member and a closure member joined to the body member by a flanged joint forming a rim and at least one of the said members having a depression therein, and a can opener comprising a U-shaped carrying shield one arm of which constitutes a guide, a cutting blade carried on the other arm of the shield, a pulling wheel rotatably mounted on the carrying shield, the shield at a position determined by the depression being in straddled engagement about the rim in such a manner that while the pulling wheel directly engages the guiding surface of the rim, the cutting blade is kept at a distance from the cutting zone of the can, the engagement of the rim by the pulling wheel being effected by rotating the pulling wheel, its continued rotation bringing the cutting blade into action.

4. In combination, a preserve can or the like comprising a body member and a closure member joined to the body member by a flanged joint forming a rim and at least one of the said members having a depression therein, and a can opener comprising a U-shaped carrying shield, one arm of which constitutes a guide, a cutting blade extending from the other arm, the shield being in straddled engagement about the rim at a position determined by the depression with the cutting blade fitted in the depression, a pulling wheel rotatably mounted on the main part of the shield and engageable with a surface of the rim opposed to the cutting blade, the engagement of the material of the can between the cutter and the pulling wheel being merely effected by rotating the pulling wheel, its continual rotation bringing the cutting blade into action.

5. A combination as claimed in claim 1, wherein the depression in the rim comprises a serrated ramp.

BOHUMIL POLÁK.