Oct. 9, 1962 M. M. SIDNEY ET AL 3,057,058

CARTON OPENER

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Fig. 1.

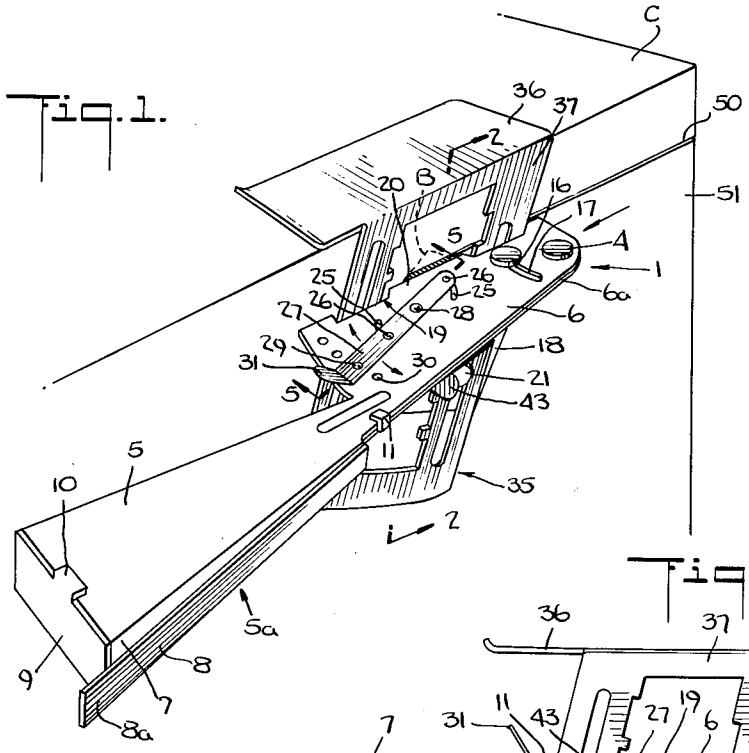


Fig. 3.

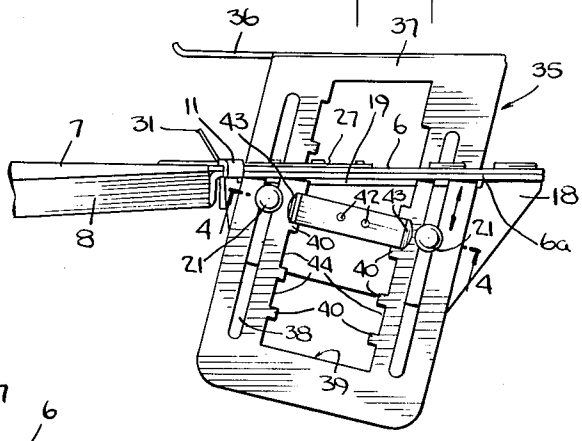


Fig. 2.

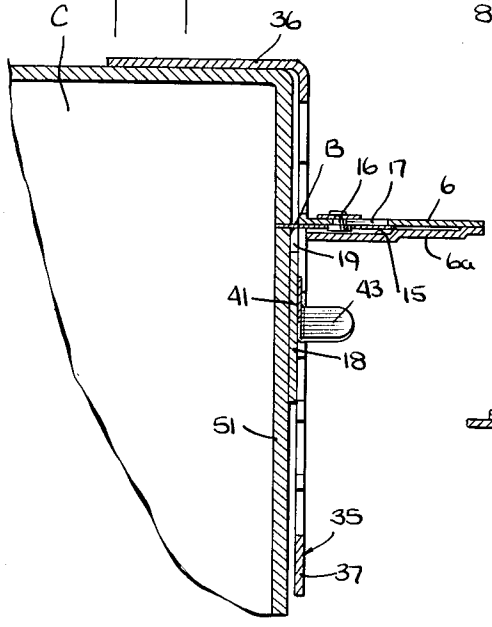
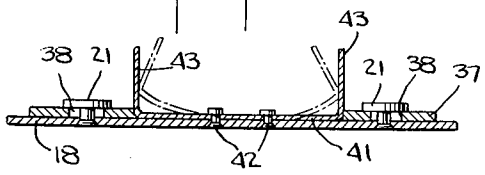


Fig. 4.



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Fig. 6.

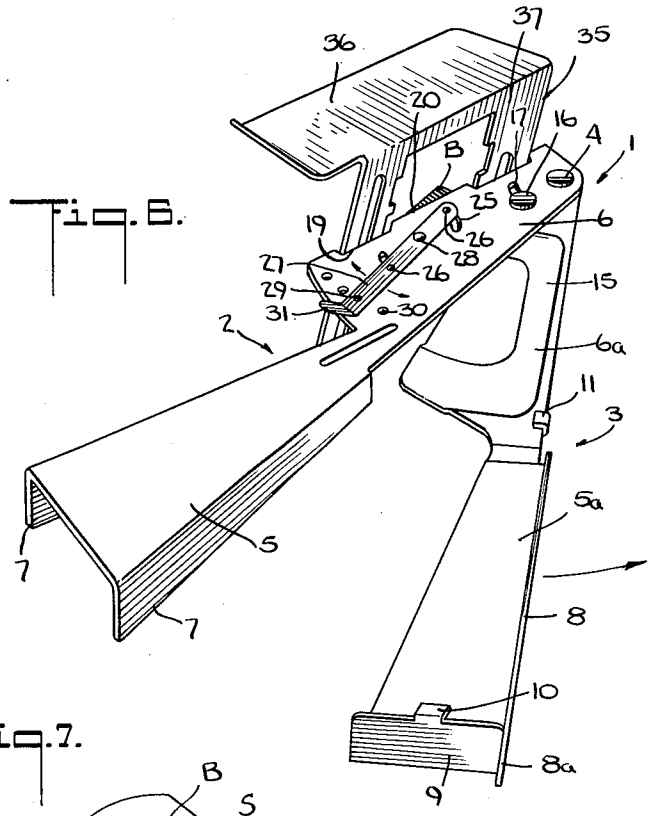


Fig. 7.

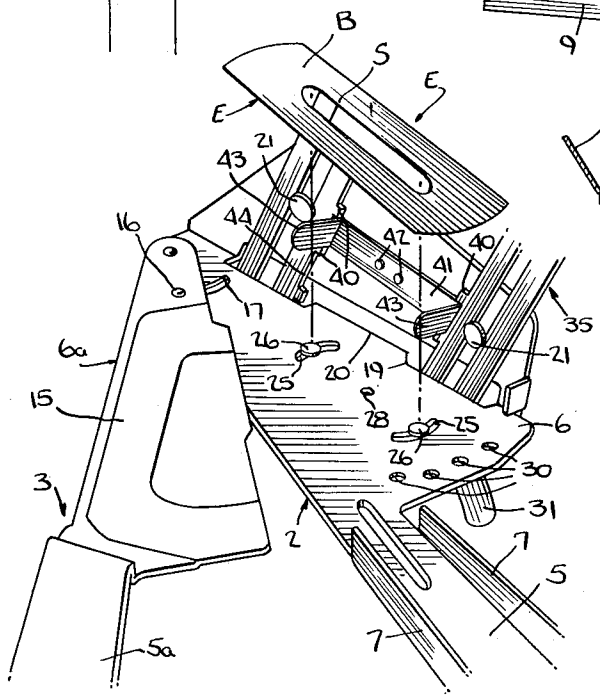
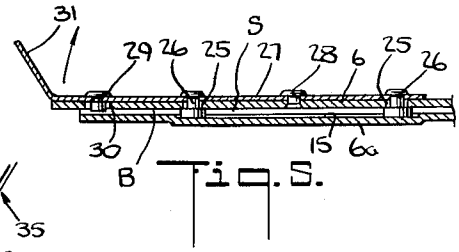


Fig. 5.



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CARTON OPENER

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5 Claims. (Cl. 30—2)

The present invention relates to an improved cutter and more particularly to an improved carton opener for opening a paperboard carton.

Heretofore, such carton openers have been extensively utilized for opening paperboard cartons and usually comprise a blade positioned in a handle. The operator inserts the blade into the carton at the desired height and cuts a slit along the carton.

One difficulty with such prior devices is that the slit made by the blade is not straight due to the fact that it is manually operated. This is undesirable particularly where the carton which is being opened contains a powder, because if a cut is inadvertently made below the level line of the powder, the contents will spill out.

In addition, when such carton openers are manually operated, the depth of the cut cannot be easily controlled so that sometimes inner cartons, which are packaged within the outer carton being opened, are inadvertently cut.

A further drawback to some of these carton openers is that the blade is difficult to remove or retract and hence it is often left exposed. In addition, retraction of the blade in such openers often requires manual handling of the blade which creates another danger hazard to the operator.

The present invention overcomes these drawbacks and provides an improved carton opener which can be easily adjusted for height and depth.

Another object of the present invention is the provision of an improved carton opener in which the depth of the knife can be regulated and locked in place so that the knife will only cut at a predetermined depth.

Another object of the present invention is the provision of an improved carton opener in which the level at which the carton opener is to cut can be easily adjusted and maintained constantly.

Another object of the present invention is the provision of a carton which can easily cut in a straight line.

Another object of the present invention is an improved carton opener in which the cutting blade can be easily removed and replaced when desired.

Another object of the present invention is the provision of an improved carton opener in which the knife edge can be easily withdrawn within the opener without the necessity of disassembling the opener and without manual handling of the blade.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a perspective view showing the improved carton opener of the present invention in the operation of opening a carton;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a side elevational view of the carton opener shown in FIG. 1;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1;

FIG. 6 is a perspective view showing the carton opener in its open position;

FIG. 7 is an exploded perspective view showing the means for removing and mounting the blade in the carton opener.

Referring more particularly to the drawings, and particularly to FIG. 6 thereof, the carton opener 1 comprises a pair of matching body elements 2 and 3 pivotally mounted to each other at 4. Each body element comprises handle portions 5 and 5a and blade-holding portions 6 and 6a extending forwardly therefrom.

The handle portion 5 of body element 2 has a pair of side walls 7 and the handle portion 5a of body element 3 has a single side wall 8 along one edge and a rear wall 9 on its rear edge. Locking tabs 10 and 11 are also provided on its rear and immediately in front of said side wall 8 to prevent separation of the two body elements 2 and 3.

With this structure the blade B is positioned between blade holding sections 6 and 6a and the body elements 2 and 3 are closed. The handle portions 6 and 6a will match with each other and fit into each other until side walls 7 of the handle portion 5 will strike side wall 8 of handle portion 5a to form a unitary structure as shown in FIG. 1. The locking tabs 10 and 11 will hold the two elements together. The side wall 8 has an extension 8a to act as a gripping tab to permit the elements to be separated, when desired.

The blade-holding section 6a has a blade-holding groove 15 therein into which the blade B is positioned and a pin 16 which extends into arcuate groove 17 of blade-holding section 6 to limit the pivotal movement of the two body e'ements 2 and 3 relative to each other.

The blade-holding section 6 has a reference plate 18 at right angles thereto and is provided with a slot 19 in the corner which it forms with reference plate 18. A height gauge 35 is mounted for sliding movement within this slot 19 and is guided by guide ridge 20 extending into slot 19. The reference plate 18 is also provided with a pair of spaced pins 21, to act as guides for the height gauge 35, as will be more fully discussed hereinafter.

The blade-holding section 6 is provided with opposed arcuate slots 25 adapted to accommodate blade-holding pins 26 extending from a blade-adjusting spring clip 27 pivotally mounted to the blade-holding section 6 by pin 28. The blade-adjusting spring clip 27 is locked in place by means of a lock pin 29 extending into one of the lock-openings 30 formed in an arcuate path on the blade-holding section 6. A handle 31 is formed on the spring clip 27 to permit it to be grasped and flexed upwardly until locking pin 29 clears the locking opening 31, after which the spring clip 27 may be rotated to adjust the position of the blade relative to the reference plate 18.

The blade B which is used with the present invention is the usual safety razor blade, as shown in FIG. 7, and comprises a pair of opposed cutting edges E with a central positioning slot S. It will, of course, be understood that other types of blades may also be used with the present invention.

With this structure the blade B is positioned on the blade-holding pins 26 extending through the blade-holding section 6 (FIG. 7). The pins 26 bear against the inner edges of the slot S in the blade B to hold the blade in place. The two body elements 2 and 3 are then swung together around pivot 4 until the side wall 8 strikes side wall 7 and lock tabs 10 and 11 assume their operative locking positions (FIG. 1) so as to close the carton opener 1 and hold the blade B in place.

It will be noted the blade B can now be retracted or extend relative to reference plate 18 by swinging the blade-adjusting spring clip 27 so that the depth of the cut can be adjusted.

The blade B can be locked in the desired position by the insertion of the locking pin 29 in one of the locking openings 30. It will also be noted that when the blade B is not in use the blade B can be placed in its wholly retracted position by swinging the handle 29 of spring clip 27 to its forwardmost position.

The blade-holding section 6 has a height gauge 35 mounted for sliding movement in the slot 19 thereof and guided by ridge 20. The height gauge 35 has an upper guide platform 36 and a sliding body portion 37 depending at right angles therefrom. The body portion 37 has a pair of longitudinally extending slots 38 into which extend pins 21 mounted on the reference plate 18 of the blade holding portion 6 to permit the height guide 35 to slide in a vertical direction.

The body portion of the upper guide platform 36 is provided with a central opening 39 having a plurality of locking teeth 40 extending from each side thereof. A locking spring clip 41 is mounted on the reference plate 18 by studs 42 and is provided with upstanding ears 43 adapted to be inserted into grooves 44 formed by the teeth 40 so as to lock the height gauge 35 in place at the desired height. The height gauge 35 is adjusted by squeezing the two ears 43 of the spring clip 41 together, as shown in dotted lines in FIG. 4, sliding to the body portion 37 of the height gauge 35 along the pins 21 to the desired height, and releasing the locks of spring clip 41 to permit it to enter one of the grooves 44 to lock the height gauge at the desired height.

The operation of the structure is obvious from the foregoing. When it is desired to insert a blade B between the blade holding sections 6 and 6*a* the two elements 2 and 3 are swung open around pivot pin 4 to expose the blade-holding pins 26. The blade is mounted on these pins and the two elements are then reunited.

The blade-adjusting spring clip 27 is then flexed upwardly by lifting handle 31 until locking pin 29 clears locking hole 30 and the clip 27 is then swung with the blade on it until the blade is exposed a sufficient distance to cut a carton at a desired depth. When this position is reached the clip 27 is released so that its locking pin 29 enters an opening 30 to lock the blade B in position.

Thereafter, the height guide 35 is adjusted vertically to the desired height by pressing the ears 43 of the locking spring clip 41 (FIG. 4) so as to clear the grooves 44 formed by teeth 40 and sliding the height gauge 35 along the slot 19 until the desired height is reached. Then the ears 43 are released so that the edges of the spring clip 41 enter into the grooves 44 to lock the height gauge at the proper height.

The guide platform 36 is then mounted on the top surface of a carton C and the instrument is then moved along the carton so that the exposed blade makes a cut 50 in the side wall 51 of the carton C as shown in FIGS. 1 and 2 of the drawings. It will be seen that due to the guide platform 36 resting on the top of the carton the height remains constant and that the knife cannot accidentally shift. It will also be noted that since the blade B is locked in place the depth of the cut also remains constant so that there is no danger of the blade making a cut that is too deep or not deep enough.

When the opening operation is finished, the blade B is

swung inwardly by movement of spring clip 27 until it is entirely within the two blade-holding sections 6 and 6*a*. The carton opener can then be stored until it is to be reused without danger of anyone cutting himself from an exposed blade.

It will be seen that the present invention provides an improved carton opener in which the height and depth of the cut can be easily adjusted without physical handling of the blade and which can be easily locked in place at a predetermined height and depth. The present invention also provides means whereby the blade can be wholly retracted when the instrument is not in use and in which the blade can be easily removed and replaced without any complicated unscrewing operations.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim:

1. A carton opener comprising blade holding means having a blade-receiving channel, a resilient blade adjusting member pivotally mounted on said blade holding means, a locking pin extending from said blade adjusting member, a plurality of locking openings on said blade holding means, said blade adjusting member being adapted to be locked in position by the cooperation of the locking pin with one of said locking openings.

2. A carton opener as claimed in claim 1, wherein said resilient blade adjusting member has a pair of pins extending therefrom adapted to cooperate with a blade to permit the position of the blade to be adjusted by movement of said blade adjusting member and wherein said pins extend through slots in said blade holding means.

3. A carton opener comprising blade holding means, a height guide movably mounted on said blade holding means, said height guide comprising a guide platform and having a plurality of locking grooves and locking means on said blade holding means adapted to cooperate with said height guide to lock the height guide at a predetermined height said locking means comprising a resilient member on said blade holding means insertable into said locking grooves.

4. A carton opener as claimed in claim 3, wherein said blade holding means has a blade-receiving channel, a resilient blade adjusting member pivotally mounted on said blade holding means, a locking pin extending from said blade adjusting member, a plurality of locking openings on said blade holding means, said blade adjusting member being adapted to be locked in position by the cooperation of the locking pins with one of said locking openings.

5. A carton opener as claimed in claim 4, wherein said resilient blade adjusting member has a pair of pins extending therefrom adapted to cooperate with a blade to permit the position of the blade to be adjusted by movement of said blade adjusting member and wherein said pins extend through slots in said blade holding means.

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