Nov. 27, 1945. C. E. STAFFORD 2,389,648

CONTAINER-OPENING TOOL

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Fig. 1

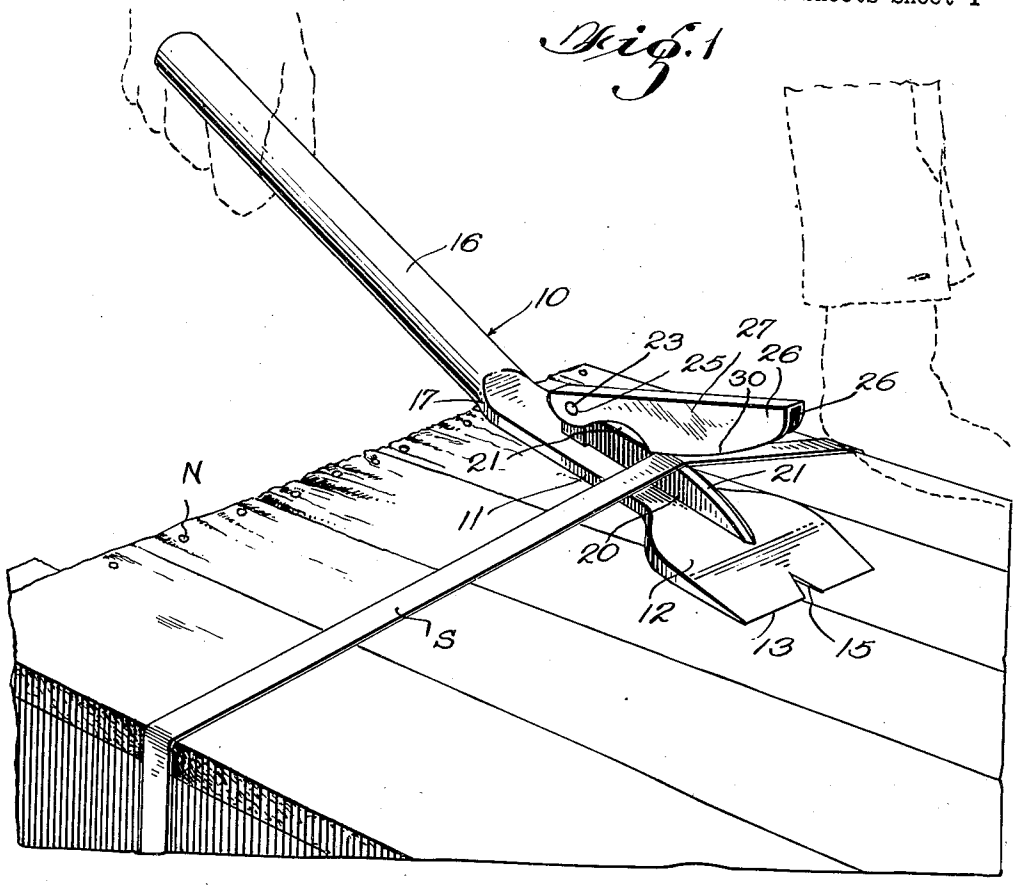
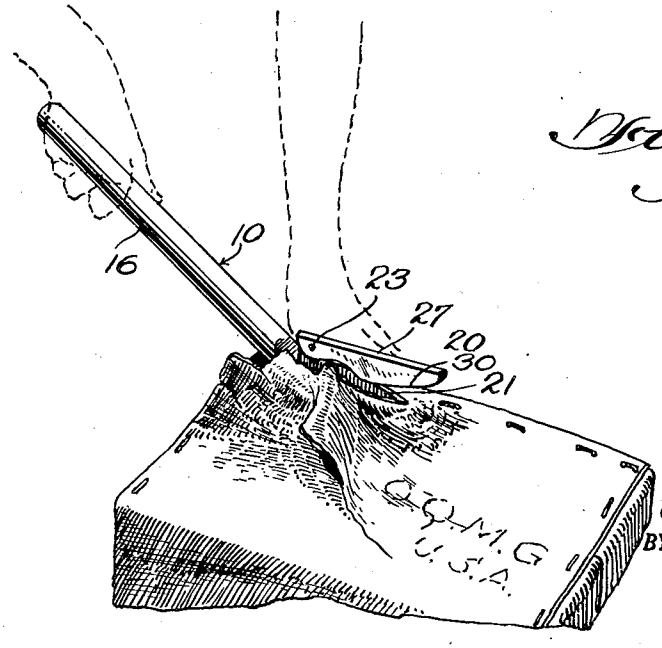


Fig. 2

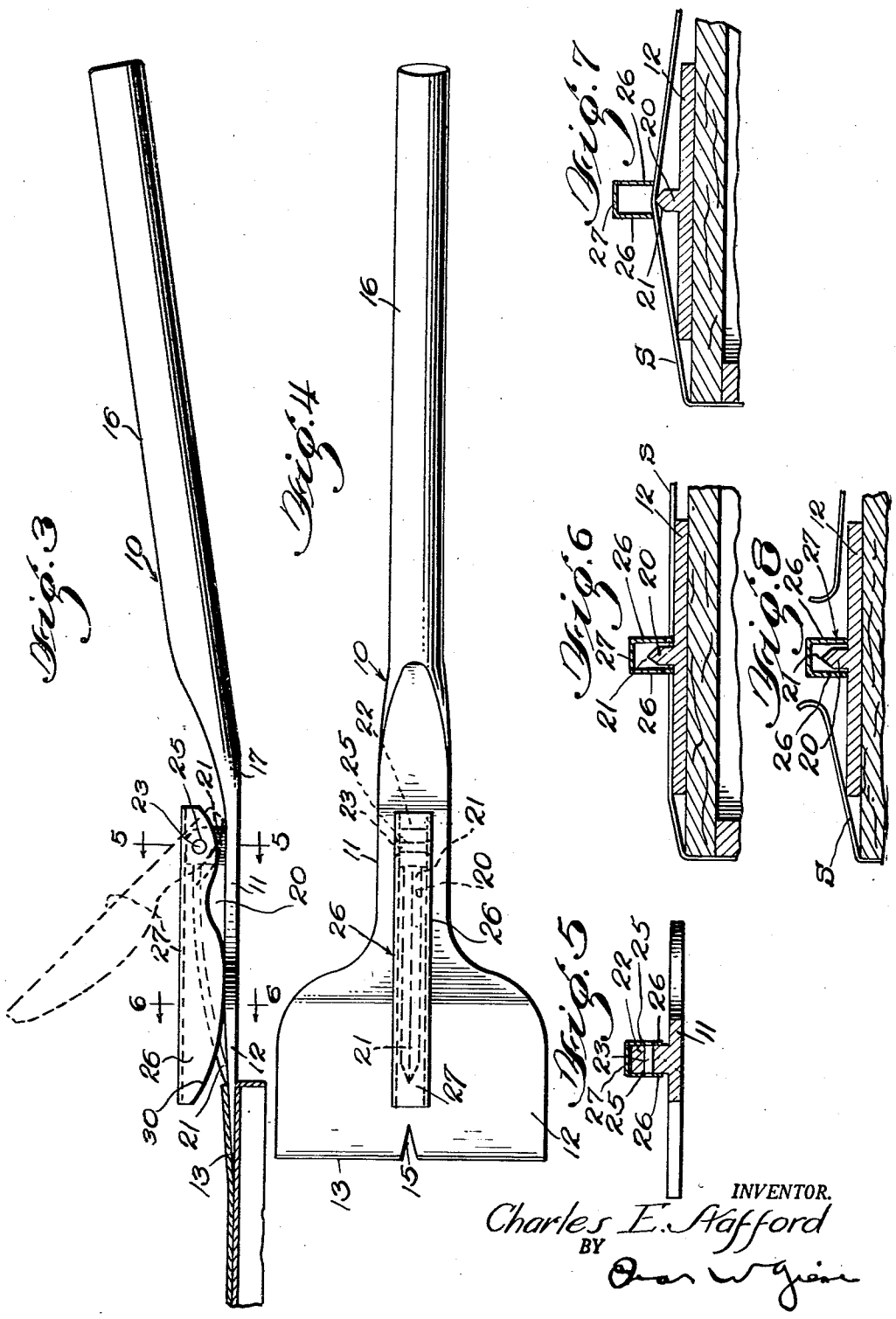


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UNITED STATES PATENT OFFICE

2,389,648

CONTAINER-OPENING TOOL

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Application February 19, 1944, Serial No. 523,170

4 Claims. (Cl. 30—151)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to tools and more particularly to cutting, extracting and prying tools for use in opening containers.

Heretofore, containers, such as barrels, boxes, bales, cartons and the like, were opened by employing shears, snips or other tools for cutting the straps, wires, ropes, and other binders. A blade of the snips is forced flatwise between the strap and container, and then the blade is turned to present its cutting edge to the strap. In this position the blade is immovably bound between the container and the strap, and the other blade has only limited movement. The strap is cut by manipulating the movable blade, but the cutting operation is awkward and prolonged owing to the inconvenient position of the snips and the limited movement of the free blade.

After the straps or other binders are cut, the operator usually attempts to open the container with his hands rather than procuring and using the proper tool. This procedure frequently results in serious injuries to the operator.

If the container is formed of relatively heavy material the operator must restort to another tool or tools to break or remove the cover. If a hand ax is employed, the results are unsatisfactory, because the ax frequently cuts through the container covering and injures its contents. If the cover of the container is formed of slats, boards or staves which are secured in place by nails and binders, then after the binders have been removed, the nails must be extracted, or the boards or slats pried from the container. These operations require the use of one or two additional tools, and frequently makeshift tools are used simply because they happen to be more conveniently located. The use of the makeshift tool frequently results in injury to the operator or contents of the container.

If the operator attempts to remove the binder member by employing a claw-hammer or claw-bar, each binder strap, wire, or rope must be placed between the claws of the tool, and then the tool twisted or oscillated to break the binder. This operation requires considerable time, and it is unsatisfactory because frequently the tool slips and injures the operator.

All the operations hereinbefore explained require the operator to employ his hands, and if his hands are not protected by heavy gloves, they are frequently seriously cut, and if the gloves are worn the operator is handicapped by their presence.

An object of this invention is to provide a tool which is constructed and arranged for convenient use in performing all the operations necessary in opening containers of various types.

Another object of the invention is to provide a tool for convenient use in performing the operations necessary in opening a container without injury to the contents of the container, the tool having a cutting element which is guarded or shielded to protect the operator against injury therefrom.

A further object of the invention is to provide a container-opening tool having a broad base or blade, a manipulating handle extending therefrom, and a knife extending perpendicularly from the blade and having a rearwardly and upwardly inclined cutting edge extending throughout the length of the blade.

A specific object of the invention is to provide a container-opening tool having a broad base or blade, a manipulating handle extending therefrom, and a knife extending perpendicularly from the blade and having a rearwardly and upwardly inclined cutting edge extending throughout the length of the blade, the front portion of the blade being laterally extended or widened to provide a relatively wide fulcrum or supporting surface.

A more specific object of the invention is to provide a container-opening tool having a broad base or blade, a manipulating handle extending therefrom, and a knife extending perpendicularly from the blade and having a rearwardly and upwardly inclined cutting edge extending throughout the length of the blade, the front portion of the blade being laterally extended or widened to provide a relatively wide fulcrum or supporting surface, and the wide forward portion of the blade tapering to a relatively long prying or entrance edge.

It is also an object of the invention to provide a tool of generally improved construction, whereby the device will be simple, durable and inexpensive, as well as convenient, practical serviceable and efficient in its use.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in form, proportion and minor details of the construction may be made within the scope of the claims with-

out departing from the spirit or sacrificing any advantages of the invention.

For a complete disclosure of the invention, a detailed description thereof will now be given in connection with the drawings forming a part of the specification, wherein:

Fig. 1 is a perspective view of the improved tool shown in use in severing a binder or strap of a shipping case or container;

Fig. 2 is a similar view depicting the improved tool in use in severing the cover of a cardboard container;

Fig. 3 is a side elevation of the improved tool, with its guard depicted in dotted lines in open or elevated position;

Fig. 4 is a plan view of the improved tool;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 4, but depicting the tool in the initial phases of its use in severing a strap on a shipping case or container;

Fig. 7 is a similar view depicting the tool, as further advanced under the strap with the cutting edge of the tool engaging the lower face of the taut strap; and

Fig. 8 is a similar view depicting the strap in severed condition.

Referring to the drawings, in which corresponding parts are indicated by similar reference characters, 10 indicates a tool having a flat base member or blade 11 which is laterally enlarged or widened adjacent its forward terminal to provide a relatively wide prying or fulcrum portion 12 which tapers forwardly and terminates in an entering or a fulcrum edge 13. The fulcrum edge 13 and the platform 12 are interrupted by a conventional V-shaped nail puller or extracting kerf 15.

The rearward portion of the base or plate 11 is thickened to blend into a manipulating handle 16 which is preferably circular in cross section. This handle is disposed in angular relation with respect to the base or blade 11, so that a fulcrum surface 17 is formed on the lower surface of the intersecting portions of the base 11 and handle 16. An integral vertical rib of substantial thickness forming knife or cutting element 20 extends perpendicularly from the flat base or blade 12 and the knife is provided with an arcuate cutting edge 21 which extends upwardly and rearwardly throughout the length of the knife 20, preferably in a convex curve flattening out towards the rear to a parallel or near parallel with base 11. A laterally thickened attaching ear or lug 21 is formed at the rear terminal of the knife 20, and this has an aperture 22 formed therein for the reception of a pivot pin 23. The pivot pin 23 extends through aligned apertures 25 formed in opposite side flanges 26 of a U-shaped guard or shield 27. The flanges 26 of the guard or shield 27 are spaced apart a distance slightly greater than the thickness of the blade 20 in order to permit the guard or shield to straddle or shield the blade when not in use, so that its sharp edge cannot be inadvertently contacted by the operator. The lower edges of the flanges 26 are upwardly curved toward the front end of the guard, as indicated at 30, to thus provide guide surfaces or runners for engaging the binders to thereby lift the guard about its fulcrum pin 23, as the tool is pushed forwardly to permit the cutting edge 21 of the knife 20 to engage the lower surface of a binding member or strap S, as best seen in Figs. 1 and 7. After the cutting edge 21 of the blade 20 engages the lower surface of a strap S (Fig. 1) the operator continues to push the tool forwardly thereby causing the lower face of the strap S to ride upwardly along the cutting edge 21 of the knife 20. After the binder strap S is drawn taut, the operator lifts the manipulating handle so that the tool swings upwardly about its fulcrum edge 13. This action is continued until the cutting edge 21 of the knife 20 severs the binder S. After the binder has been cut, it snaps from its binding position, shown in Fig. 1, to the position shown in Fig. 8, thereby releasing the guard shield 27 so that it again gravitates to cover or house the knife 20, thereby preventing the sharp edge 21 of the knife 20 from injuring the operator.

After the straps or other binders have been severed, the entrance edge 13 of the blade 11 is forced between the cover boards and a side or end of the box to thereby pry the cover boards from the box. If preferred, the securing nails N, best seen in Fig. 1, are removed from the cover boards by manipulating the tool so that its nail pulling kerf 15 is positioned to engage the nail under its head, and then rocking the tool above its fulcrum surface 17 to extract the nail.

If a heavy cardboard container, of the type depicted in Figs. 2 and 3, is to be opened, the entrance edge 13 on the tool is forced between the covers and the overhanging side flaps of the container to permit the tool to pry open the engaged portion of the cover. The tool is then forced forwardly to cause its tapered cutting edge 21 to cut through the cover, so that it can be moved back from covering position. As the cutting blade 20 moves forwardly, the shield 27 is lifted by its engagement with the cover, thus permitting the cutting edge 21 of the knife to freely engage the material to be severed.

When employed to sever binding straps, wires, rope, cord and the like, the tool 10 is pushed along the container between the binder S and container until the binder is drawn taut, then the operator elevates the handle 16 to rock the tool about its fulcrum edge 13, thereby causing the cutting edge 21 to cut further into the binder until it is completely severed. In the meantime, the guard 27 has engaged the strap S and the guard 27 swung upwardly above its pivot 23, so that the cutting edge 21 of the knife 20 is exposed to perform its cutting function. After the binders and cover components have been severed, the guard 27 gravitates to its housed position, thus covering the knife 20 so that it is shielded from contact by the operator.

The use of the tool in severing heavy metal straps on shipping crates is best shown in Figs. 1, 6, 7 and 8. In the initial forward movement of the tool towards the strap S, the broad prying portion 12 of the base blade 11 engages the strap to draw it taut, as best seen in Fig. 6, and as the tool moves forwardly, the strap rides upwardly along the inclined cutting edge 21, thereby further tensioning the strap, as best seen in Figs. 1 and 7. In this position the strap is partially severed, and the severing operation is completed by the operator moving the manipulating handle upwardly so that the tool rocks above its fulcrum edge 13 thereby causing the cutting edge 21 to cut completely through the strap as best seen in Fig. 8.

In using the tool to open a cardboard container or the like, the tool is pushed forwardly and rocked upwardly about its fulcrum edge 13, thus

causing the cutting edge 21 to sever the cover so that it can be readily moved from covered position to expose the contents of the container.

From the foregoing it will be readily seen that a container of any conventional commercial type may be readily opened by conveniently employing this relatively simple tool, and the entire opening operation may be completed without resorting to the use of other tools, thus saving valuable time in the operation.

Having thus described my invention what I claim as new and useful is:

1. A container-opening tool including a flat base having a widened front portion to provide a relatively wide entrance and fulcrum edge, an elongated knife extending along the base and disposed perpendicularly upwardly from the base and having an upwardly and rearwardly convexly curved cutting edge which is at its rearward portion substantially parallel with said base, and a manipulating handle extending rearwardly from the rear portion of the base and disposed upwardly at an angle thereto forming at the intersection of the base and manipulating handle a fulcrum about which the tool is rocked to elevate the base.

2. A container-opening tool including a flat base having a widened front portion to provide a relatively wide entrance and fulcrum edge, an elongated knife extending along the base and disposed perpendicularly upwardly from the base and having a cutting edge which is at its rearmost portion substantially parallel with said base and which curves convexly and downwardly towards the front, and a manipulating handle extending rearwardly from the rear portion of the base and disposed upwardly at an angle thereto forming at the intersection of the base and manipulating handle a fulcrum about which the tool is rocked to elevate the base.

3. A container-opening tool including a flat base having a widened front portion to provide a relatively wide entrance and fulcrum edge, an elongated knife extending along the base and disposed perpendicularly upwardly from the base and having a cutting edge extending rearwardly and upwardly from said base, and a manipulating handle extending rearwardly from the rear portion of the base and inclined upwardly at an angle thereto.

4. A container-opening tool including a flat base having a widened front portion to provide a relatively wide entrance and fulcrum edge, an integral vertical rib of substantial thickness extending along the upper surface of said base and having a cutting edge extending rearwardly and upwardly from said base, and a manipulating handle extending rearwardly from the rear portion of the base and inclined upwardly at an angle thereto.

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