

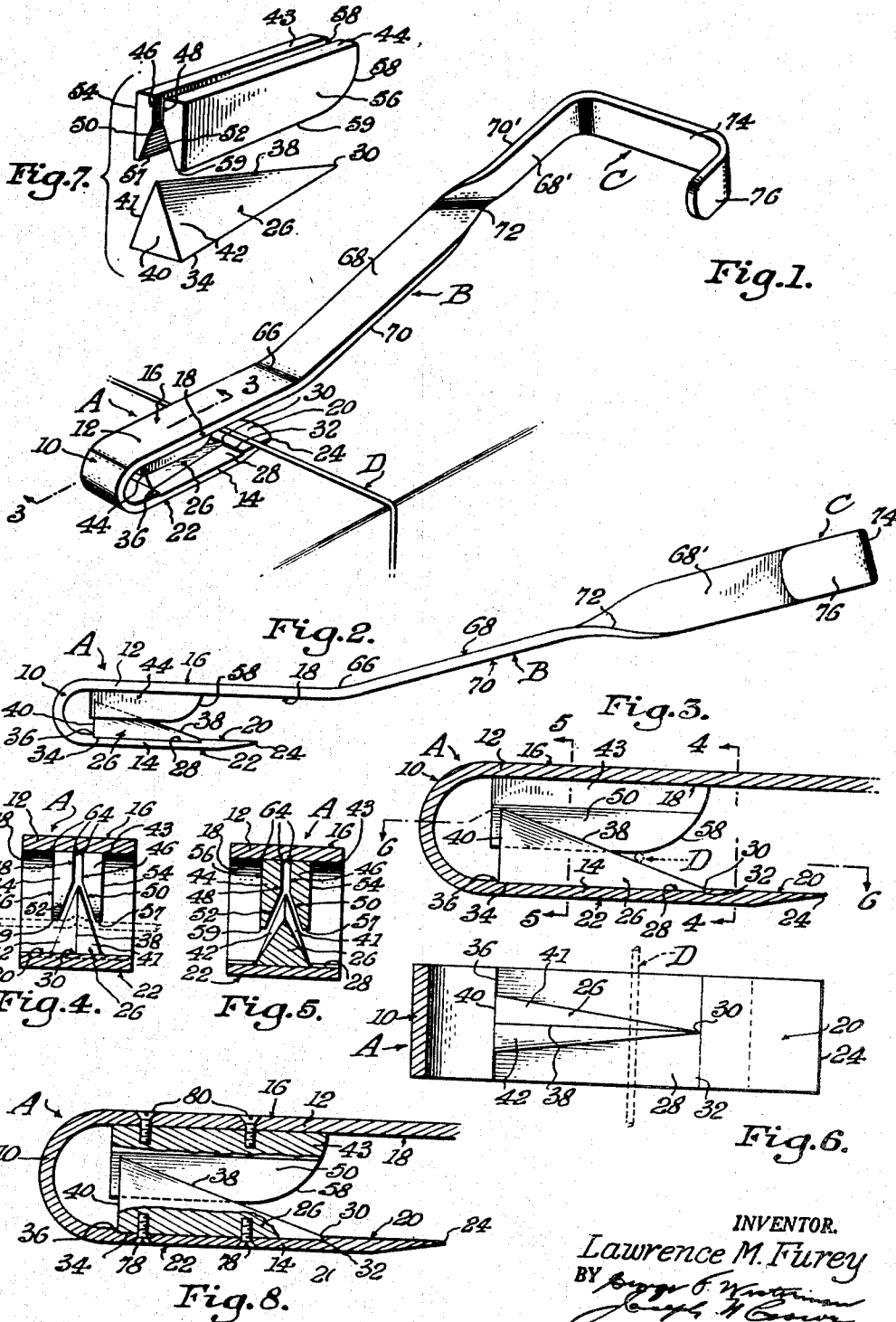
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CONTAINER BAND SEVERING TOOL

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CONTAINER BAND SEVERING TOOL

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

The present invention provides certain improvements in a tool that is intended to be used for severing tying means such as endless metallic wires, strips, straps or the like which are employed conventionally in wrapping, securing or reinforcing heavy articles such as barrels, bales, boxes and the like, which tying means must be removed for gaining access to the interior of such articles.

The present invention provides a single tool for severing and removing such lashing ties or bindings, both the severing and removing thereof from the container being effectuated by the improved structural design of the present single tool which not only obviates awkwardness in manipulation, but which affords protection to an operator that is adequate to prevent injury and wherein the improved single tool is enabled to be used for all manipulative operations attendant upon severing and removing such lashing ties or bindings from the containers or receptacles, thereby relieving the operator of the need for shifting tools or the need for taking special precautions against personal injury, for example, by the use of inherently awkward glove.

With the foregoing considerations in mind, it may be stated that one of the objects of this invention is to provide a single tool for severing lashing ties or bindings from heavy articles of commerce and for lifting the severed ties for releasing the receptacles or containers, whatever may be their character, for opening the same to enable access to be had to the contents thereof.

A further object of the invention is to provide a single tool of the indicated character which preferably is integral throughout and which includes an improved construction of a protected severing head for cutting or severing the binding lashings and an improved configuration of an operating handle portion which is remote from the severing head and which permits actuation of the tool to enable expeditious severing and release of the lashings relative to the receptacle or container to which the lashings have been applied, the entire configuration of the improved integral tool being such that the requisite manipulations thereof are accomplishable quickly and conveniently and without contact of the operator's hands with any part of the work and with attendant elimination of potential injury hazards to the operator.

A still further object of the invention comprises an improved disposition of cooperating cutting or severing instrumentalities that are in-

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tegrally disposed in the cutting head of the improved tool for cooperatingly and simultaneously acting on the bindings or lashings being severed in a complemental and simultaneous manner, and in which the severing action of such instrumentalities is applied to the lashings in opposite directions and with simultaneous application of severing forces to the lashings.

A still further object of the invention is to provide an integral tool of the above-indicated character which has been fabricated with a configuration or contour wherein the severing instrumentalities are covered or guarded in the severing head against accidental approach or contact by the hands of an operator, and wherein the handle portion of the tool automatically or involuntarily positions the operator's hands remotely from the lashings being severed and removed and also from the container or receptacle itself that is being released from such lashings.

Further objects and advantages of the present invention will become apparent as the description proceeds and the features of novelty will be pointed out in particularity in the appended claims.

Generally speaking, the present tool comprises an integral, elongated steel bar having an end portion fabricated into a severing head and an opposite end portion fabricated into an operating lever handle portion, the severing head including a U-shaped or "goose-neck" bend defining top and bottom branches and including work-severing means, there being a cutting blade of a specifically improved contour mounted on the upper surface of the bottom side or base of the cutting head, and additional spaced parallel work-bending and severing blades mounted on the lower surface of the upper or top branch of the cutting head and longitudinally overlapping opposite sides of the cutting blade adjacent to the cutting edge thereof, and acting on the work oppositely to the cutting blade, all of the blades being mounted in the cutting or severing head of the tool and entirely within the lateral confines thereof for guarding against accidental access of an operator's hand to these blades. The severing head of the tool has a free end which comprises a wedge-like guide end fulcrum surface which is insertable beneath a lashing and lifts the lashing into engagement with the cutting blade, the cutting edge of which blade also is a wedge-acting edge which slopes upwardly in the direction of the U-shaped bend of the cutting head, the cutting blade thereby being wedge-shaped for liftingly directing the lashings being severed against the complemental oppositely-acting severing blades, whereby the lash-

ings are severed by an operator suitably manipulating handle portions of the tool. The upper surface of the operating head is continued into a shank portion of the tool, in which is formed an upwardly-directed bend for directing the handle portion of the tool upwardly away from the container being opened, the shank portion of the tool having a 90 degree longitudinal axial twist or bent therein and then a 90 degree transverse bend to form a handle grip for operating the tool. This handle grip is vertically offset for a considerable amount from the receptacle being opened for providing adequate clearance between this handle grip and the receptacle, so that the hands of an operator grasping the handle grip and pulling on the tool or otherwise manipulating the tool will be maintained safely out of contact with the receptacle being opened.

The above generally described preferred embodiment of the improved tool of the present invention is illustrated in detail by the accompanying drawings, in which:

Fig. 1 is a perspective view of the tool in operative engagement with a lashing tie or binding on a receptacle for severing the said binding;

Fig. 2 is a side elevation of the tool of Fig. 1;

Fig. 3 is a fragmentary sectional elevation taken longitudinally through the severing head of the tool on the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a transverse sectional elevation through the severing head of the tool, the view being taken on the line 4—4 of Fig. 3, looking in the direction of the arrows and indicating by dotted lines the application of a lashing tie or binding being cut, to the cooperating blades in the severing head;

Fig. 5 is a further transverse sectional elevation through the severing head, the view being taken on the line 5—5 of Fig. 3, looking in the direction of the arrows;

Fig. 6 is a longitudinal sectional elevation through the cutting head, the view being taken on the line 6—6 of Fig. 3, looking in the direction of the arrows, and indicating the work in cutting position relative to the blades;

Fig. 7 is a detailed diagrammatic perspective view of the cooperating blade assembly for the severing or cutting head of the tool, showing further details of the relative position of the blades which, however, are shown in the view as being dismounted from the head of the tool; and

Fig. 8 is a fragmentary longitudinal sectional elevation through the cutting head, the view being similar to Fig. 3, but showing a modified mounting for the blades.

Referring more particularly to the drawings which show the structural details of the improved tool, which tool preferably is an integral and flattened steel bar having a cutting head (severing head) A, a shank B, and a handle C.

The cutting head A is fabricated by imparting a U-shaped bend 10 into the bar at a sufficient distance from an end thereof to provide substantially parallel top and bottom portions 12 and 14, respectively, the top portion 12 having a substantially planar outer surface 16 and a similar inner surface 18, while the bottom portion 14 of the head A has a substantially planar inner surface 20 and a similar outer surface 22, the inner surface 18 of the top portion of the head being parallel to the inner surface 20 of the bottom portion or the base of the head. The cutting head A has its free end terminating in a wide wedge-acting lip or blade 24 which provides a

wide entrance and fulcrum portion and which in operation of the tool is adapted to be inserted beneath a binding tie D which is to be cut for lifting this tie D into severing engagement with the cutting assembly which is mounted in the cutting head.

This cutting assembly comprises a bottom wedge-shaped cutter 26 which seats in a bottom recess 28 provided therefor in the inner surface 20 of the bottom or base portion 14 of the cutting head A, the apex 30 of the cutter wedge 26 seating against the forward abutment shoulder 32 of the recess 28, the base 34 of the cutter 26 seating against the rear abutment 36 of the said recess 28. The cutting edge 38 of the cutter 26 slopes upwardly and rearwardly from the apex 30 of the cutter 26 to the rear end 40 of the cutter 26. The sides 41 and 42 of the cutter 26 slope inwardly (i. e. converge) from the base 34 to the cutting edge 38. The cutter 26 preferably is welded in position.

The cutting assembly in the head A is completed by a pair of spaced work-tensioning and severing elements 43 and 44, which are welded to the inner surface 18 of the top member 12 of the head A. These elements 43 and 44 have spaced opposing inner sides or surfaces having straight parallel upper portions 46 and 48, while the lower portions 50 and 52 of the inner surfaces of these elements diverge downwardly adjacent to but spaced from the sides 41 and 42 of the cutter 26 and in parallelism therewith, as is apparent from the drawings, elements 43 and 44 acting cooperatively with but in opposition to the cutter 26. This downwardly diverging configuration of the severing elements 43 and 44 is on the inner sides thereof as aforesaid, the outer surfaces 54 and 56 of these elements 43 and 44 being vertical and planar throughout, but having arcuately curved forward ends 58 which guide the work D into a V-shaped opening between the cutter 26 and elements 43 and 44 and into severing engagement between the bottom surfaces 57 and 59 of the elements 43 and 44 and the cutting edge 38 of the bottom cutter 26. The bottom surfaces 57 and 59 of these severing elements 43 and 44 serve to apply a downwardly-directed stretch on the work D as the latter is forced continuously upwardly between the upwardly sloping cutting edge 38 of the cutter 36 and the bottom surfaces 57 and 59 of the elements 43 and 44; and thus the work D is progressively deformed under increasing tension between such upwardly directed cutting edge 38 and the downward acting bottom surfaces 57 and 59 of the said elements 43 and 44 until the work D is cut through by the cutting edge 38 as the operator continues to pull the tool forwardly with the cutter 26 and the cutting edge 38 operating under the work D and progressively lifting the latter against the spaced oppositely directed restraint exerted by the elements 43 and 44 until the work is cut through. The manner of deformation of the work D prior to its becoming severed is indicated in the dotted lines of Fig. 4. As will be seen from the drawings, the elements 43 and 44, which act as work-restraining or tensioning means, depend from the under, or inner, surface 18 of the top portion 12 of the cutting head A and are joined integrally thereto by weld unions indicated at 64.

As will be seen from the drawings, for example Figs. 1 and 2, the improved tool includes in addition to the cutting head A, a forwardly inclined shank portion or section B, which is formed by upwardly offsetting the integral tool bar relative

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to the head A by bending the bar upwardly relatively to the head A, as indicated by an upward arcuate bend 66, the top surface (upper surface) 68 extending slopingly upwardly from the upper surface 16 of the cutting head, with the under surface 70 of the shank section substantially parallel with the upper surface 68, the thickness of the tool bar being substantially uniform throughout. The forward and upward inclination of the shank section B, which is dependent upon the angular value of the bend 66, is sufficient to elevate this shank section substantially above the top surface of any receptacle to be opened, so that there will be a substantial clearance between this section B and the receptacle to be opened for preventing injury to an operator's hands during use of the tool.

At a suitable distance from the upward bend 66 to provide this substantial clearance, the shank portion B is twisted helically along its longitudinal axis as is indicated by the helically and longitudinally-directed twist 72 which extends through approximately 90 degrees, so that the upper outward surface 68 of the bar becomes a vertical inner surface 68' and the lower or inner surface 70 of the bar becomes an outer vertical surface 70'.

At a suitable distance forwardly of the helical twist 72, the tool bar is bent at approximately right angles in a direction transversely to the shank section B to provide a handle section C having a handle grip portion 74 which is terminated in a hand abutment flange 76 adjacent to the end of the handle section.

The tool is operated by inserting the opening edge 24 beneath the binding D which is to be severed, and the operator pulls the tool towards him by grasping the handle grip 74 and pulling on it, there being adequate clearance between the handle grip and the top of the receptacle being opened, so that there is no danger of injury to the operator's hands. As the edge 24 is pulled under the binding D, the latter is raised by the wedge action of the edge 24 until the end of the lower cutting blade 26 enters beneath the binding D, the upward inclination of the cutting edge 38 of the cutting element 26 progressively forcing the work D under progressively increasing oppositely-directed tension between the cutting edge 38 and the bottom tensioning surfaces 57 and 59 of the elements 43 and 44 depending from the inner top surface 18 of the cutting head, until finally the work D is severed on this cutting edge 38.

When the work D has been severed, the tool may be used as a lever fulcrumed on the forward underside portion of the head A adjacent to the edge 24 to lift the severed portions of the work from the receptacle in an obvious manner, so that at no time during removal of the binding tie is there any need for the operator to engage the tie with his hands, or to shift to the use of another tool. The present tool also may be used as an opening lever for a receptacle for pulling open the slats of a crate, or a barrel head away from the barrel staves, by proper insertion of the wedge-acting edge 24 of the tool beneath the said slats, or between the barrel staves and barrel head.

From the foregoing description, it will be seen that the present tool is a complete receptacle-opening instrument, including means for severing metallic binding wires or strips or the like, means for releasing such wires or strips from the receptacle after severing, and for pulling apart component parts of the receptacle after release

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of the bindings therefrom, the tool being adapted for complete use without requiring contact between an operator's hands and the binding tie being severed and removed, or with the receptacle during opening operations. The U-shaped head A enclosing the oppositely acting severing means, further protects the operator from flying fragments of materials from the tie or receptacle during opening thereof.

In Fig. 8 the oppositely directed severing elements are shown as being held in place by machine screws 78, 80, which enable the said elements to be removed for replacement if and when such replacement becomes desired, rather than being mounted permanently in place as is the case with the modification of Figs. 1 through 7.

It will be apparent from the foregoing description that the drawings and description are directed to a preferred, but exemplary, embodiment of the present improved tool, structural details of which may be modified in various ways without departing from the spirit of the invention as will become apparent to one skilled in this art, and it will be understood accordingly that it is intended and desired to embrace within the scope of the invention such modifications and changes as may be necessary to adapt it to varying conditions and uses as defined in the appended claims.

Having thus described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A container-opening tool comprising a continuous bar having flat upper and lower surfaces and opposite end portions, one of which portions defines a cutting head provided with cooperating work-severing instrumentalities defining a substantially V-shaped opening therebetween for receiving and holding work being severed by the said instrumentalities, the said bar having an upwardly directed angular bend therein to form a shank portion becoming progressively elevated above a container being opened and having its opposite end portion bent into a transversely extending handle for the tool, the said shank portion having a longitudinal helical twist therein intermediate the upwardly directed angular bend and the handle, the said twist extending through an arc of substantially 90 degrees whereby the upper flat surface of the shank portion of the bar becomes an inwardly-directed flat surface for the handle enabling convenient hand-grasping of the handle by an operator, the handle extending substantially horizontally from the shank portion at an elevation relative to the container sufficient for providing clearance for the operator's hands above the container for preventing injury to the operator during opening manipulations of the tool.

2. A container-opening tool as defined in claim 1 wherein the upwardly-directed angular bend in the bar is in advance of the head, with the twist intermediate the said bend and the handle, the said handle having a hand-grip adapted to be pulled towards an operator during work-severing operation of the tool.

References Cited in the file of this patent

UNITED STATES PATENTS

70 Number	Name	Date
442,254	Hicks -----	Dec. 9, 1890
521,115	Hopper -----	June 5, 1894
2,219,476	Fossa -----	Oct. 29, 1940
2,439,639	Tilly -----	Apr. 13, 1948
2,482,805	Stafford -----	Sept. 27, 1949