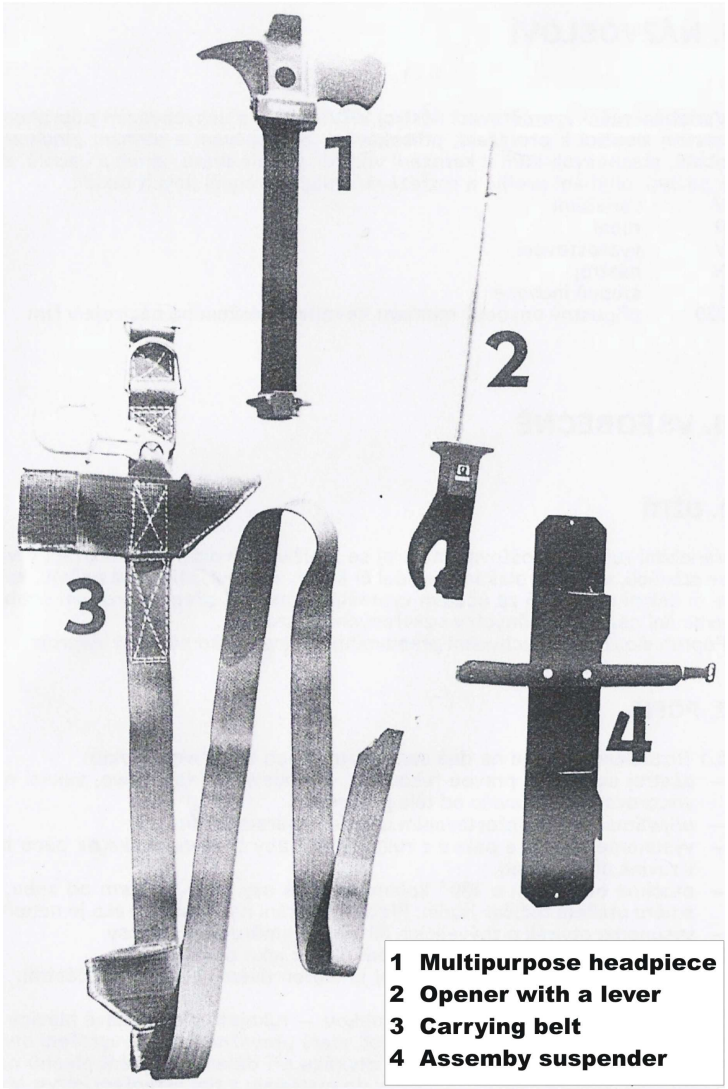
VRVN 1-220



NARIMEX PRAHA spol. s r.o.

Variable Manual Rescue Tool VRVN 1-220

1 – Multipurpose headpiece
2 – Opener with a lever
3 – Carrying belt
4 – Assembly suspender

NARIMEX PRAHA spol. s r.o.

I. Terminology

Multipurpose manual rescue tool VRVN 1-220 with a carrying belt is a tool used for smashing through, cutting, cutting through sheet metal casings, walls and car bodyworks. Other uses include wire and cable cutting, lever opening, profile bending and cutting of canvas or other types of textiles.
V – variable/multipurpose
R – manual („rucni“ in the czech language)
V – rescue („vyprostovaci“ in the czech language)
N – tool („nastroj“ in the czech language)
1 – Mark
220 – maximum moment of flexural force in Nm

II. General Information

1. The use of the tool

Multipurpose manual rescue tool is designed for creating or enlarging holes/openings in walls, doors, car bodyworks or other machinery, lever opening, cutting, smashing or chopping of materials in order to rescue drivers, passengers or for the rescue of individuals trapped in closed spaces. Carrying belt should only be used to attach the tool to the rescuer’s gear.

2. Tool description

2.1 Multipurpose manual rescue tool is made up of two separate parts. The following steps will help you to diassemble the tool into two separate parts:

- hold the tool in you right hand so that the headpiece is facing the right side, the edge is at a level position facing away from your body.
- open the safety lock by switching it 90 degrees in the upward direction
- slide out the opener with the lever from the handle so that the colored mark on the lever is at the level position with the bottom part of the handle
- turn the opener 180 degrees along the lever‘s longitudinal axis away from yourself in clockwise direction. The precast opening on the outside of the opener is facing upward
- slide out the opener the remaining 80 millimeters (approximately 1/3 of an inch) in the direction of the longitudinal axis
In order to assemble the tool, carry out the above steps in reverse order.

The two parts comprising the Multipurpose manual rescue tool:

2.2 Multipurpose headpiece with a handle has three active parts. Three sided barb used mainly for smashing a hole in sheet metal in order to secure an opening for the later use of the opener for further cutting of the sheet metal, smashing through glass, or for sticking the tool into a material in order to create an anchor. There is a cutting edge in the arc underneath the drift for cutting canvas or other textiles or plastic materials. The chopping part with a blade is used for chopping off of materials, cables, wires and reinforcements. It may be used as an anchor in case of a deep cut. There are individual wedge shaped teeth on the sides used for lever opening. A barb placed in the direction of the handle is separated from it by half opened wedge shaped groove which thins out in about 25 millimeters (approximately 1/10 of an inch) with the possibility of attaching circular profiles having the maximum diamater of 15 millimeters (approximately 1/17 of an inch). On the front side of the headpiece, opposite the handle there is a curved barb suitable for lifting, pushing away or lever opening of heavy objects. Rough grooves line the arc between the two barbs, perpendicularly to the wedge shaped teeth. The grooves serve to prevent the slipping of the headpiece on the material on which it is resting. There are two openings going through the headpiece perpendicularly to each other. These are used to hold the lever from the second part of the tool. Thus, the maximum force which may be extended through levering may be doubled. The handle which is fixed in the headpiece is covered with shock absorbing matrials. The lever with the opener is fixed in the handle. The opener safety is made up of spring loaded turnable pin. The angle of the safety switch is 90 degrees. Both sides of the switch are arrested in the opening made in the cast to prevent spontaneous release of the switch.

2.3 Mutlipurpose cutting and chopping tool – the opener with a lever. In the basic tool set up, the lever of the opener is pushed in the handle. This position is arrested via the safety switch/pin. This assembled position of the tool is used when attaching the tool to the carrying belt. Both the tool and the belt are attached to the assembly suspender and supplied to the customer as such.
The opener with the lever make up the second functional part of the tool used for chopping off of bolts, rivets, boltheads, door and window hinges, etc. The chopping off is carried out in the following manner: release the lever safety by turning it 90 degrees and use the headpiece with the handle as a stamper. In this case, the tool is not divided into two separate parts. On the opener, there is also an elongated edge with sharp teeth against it. This prevents the opener from slipping during the cutting of materials. In order to place the opener, first smash a hole through the material with the three sided barb or the blade. Next, place the cutting edge in the opening. By alternating between turning and sliding the tool, you will achieve the cutting/separating effect. The opening in the cast on the side of the opener serves to secure the cable, wire, etc. in order to cut these easily on the flat surface of the opener.

WARNING: The parts of the tool are NOT insulated against electricity and thus are NOT non-conductive. Therefore, the tool MUST NOT be used for separating cables/materials which have electricity running through them!

2.4 The belt is used for carrying/ hanging the tool. It is made up of a silicon textile 45 millimeters wide (approximately 1/6 of an inch) and 2.2 millimeters thick (approximately 1/115 of an inch). On the belt there is a binding with a flap. When the tool is in the „transport“

position, the active parts are covered. There is a half fastener and a safety spring hook sewn into the belt.

2.5 Assembly suspender makes up an integral part of the delivered product. Its purpose is to secure the tool including the belt at a suitable place – at the maintenance area in stationary case or inside the vehical in mobile settings. The universal costruction of the suspender allows for arbitrary mounting position. For securing the suspender, use three self tapping screws 5x10 (millimeters). Both the tool and the belt are fixed in the suspender via textile strap and a fastener.

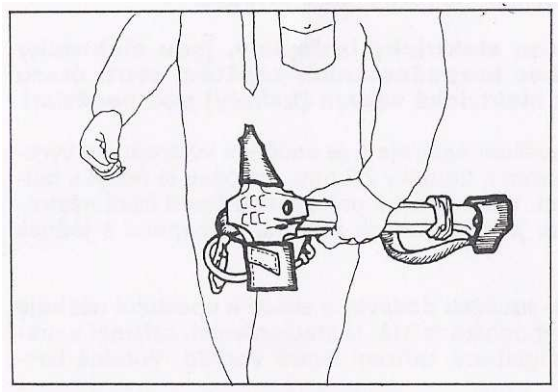
III. Technical data

Technical parameter	Symbol	Metric Units	Imperial Units
Weight:			
the whole tool	*M*	*4.55 kg*	*10 lbs.*
headpiece with the handle	M_a	*2.85 kg*	*6.3 lbs*
opener with the lever	M_o	*1.7 kg*	*3.74 lbs.*
Maximum flexural moment:			
on the headpiece handle	T_h	*220 Nm*	
on the opener lever	T_o	*160 Nm*	
Forces corresponding to flexural moments:			
on the headpiece handle	F_h	*735 N*	
on the opener lever	F_o	*565 N*	
Tested forces:			
Belt pull force	F_b	*10 kN*	
Spring hook	F_k	*12 kN*	
Half fastener - outstretching	F_s	*5 kN*	

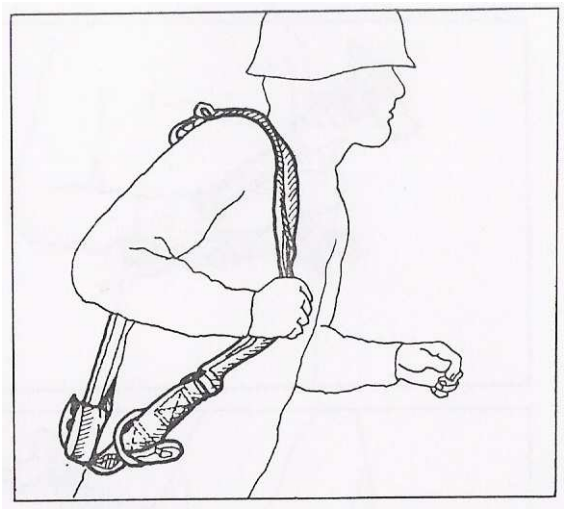
IV. Basic manipulation with the tool

<u>Transporting the tool</u>

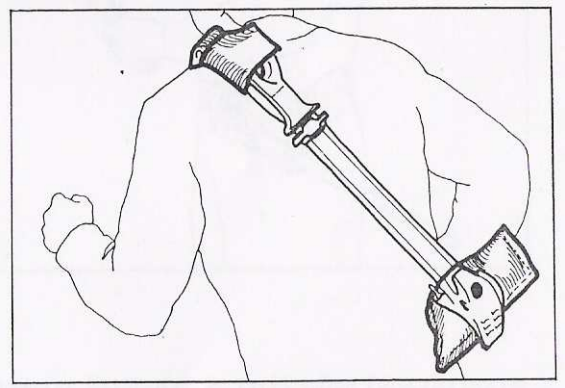
Carrying the tool in your hand



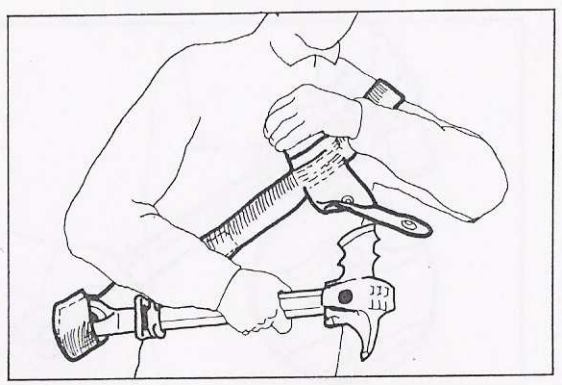
Slinging the tool over your shoulder



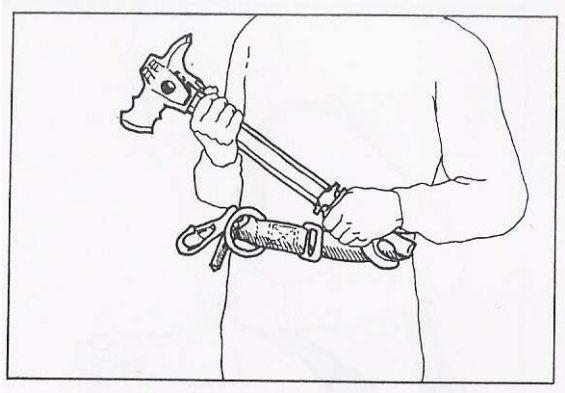
Carrying the tool on your back



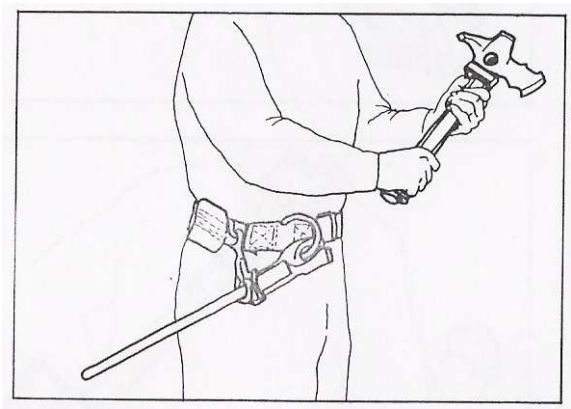
Taking the tool out of the carrying belt



Holding the tool correctly in your hands

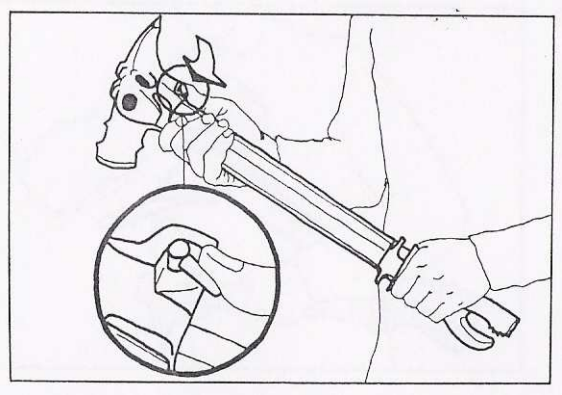


Hanging the opener on your belt – work with the disassembled tool

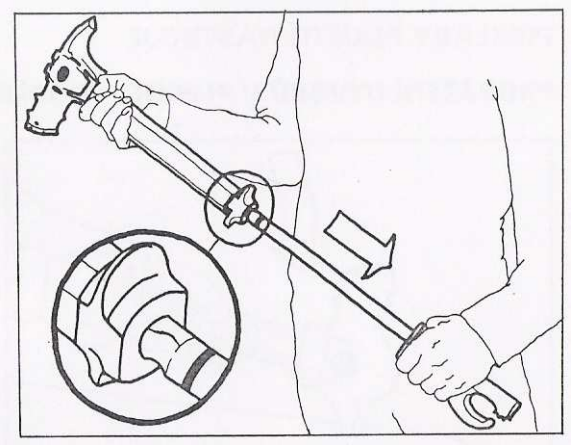


Disassembling the tool into 2 separate parts

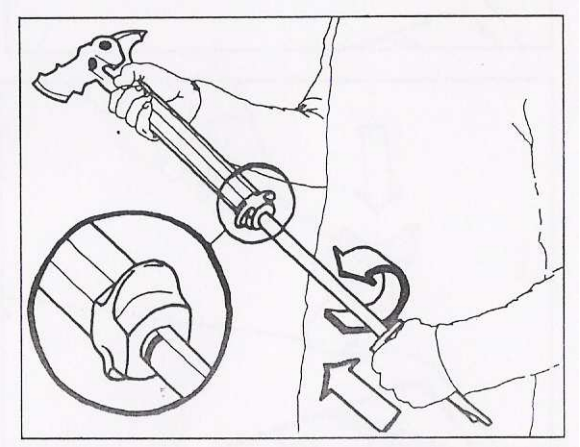
Releasing the safety on the lever



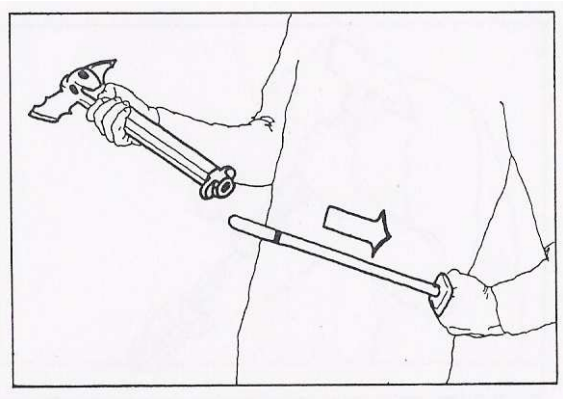
Sliding out of the opener and turning it 180 degrees along the longitudinal axis – the mark on the lever is level with the end of the handle



Sliding out of the lever from the handle



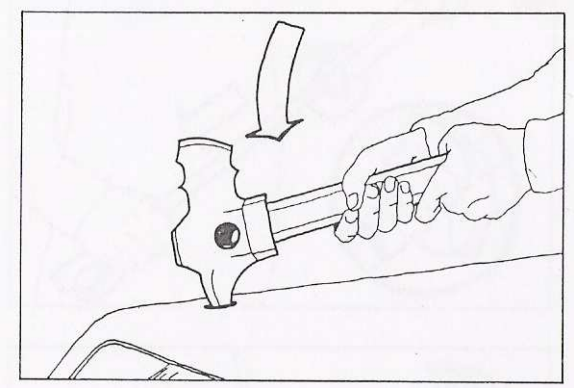
Disassmbled tool into two parts



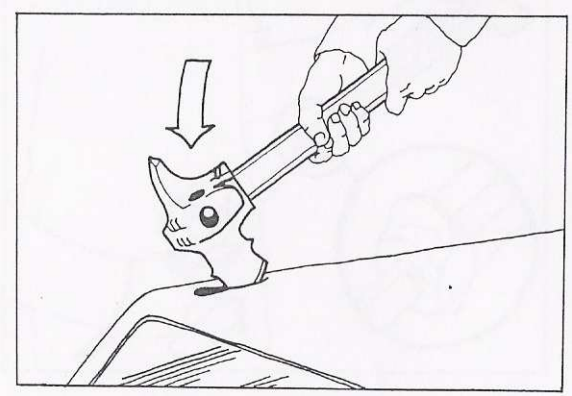
EXAMPLES OF TOOL USE

<u>Making holes in sheet metal, smashing through reinforced glass</u>

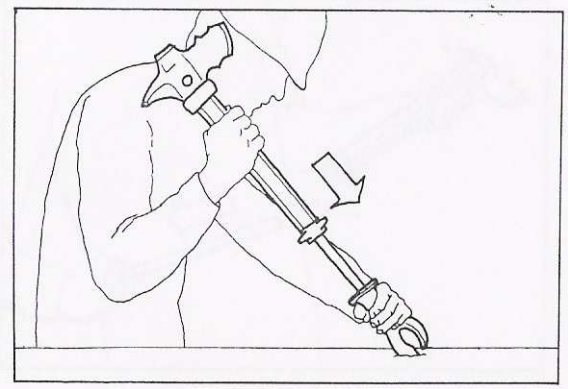
Making a hole with the barb on the multipurpose headpiece



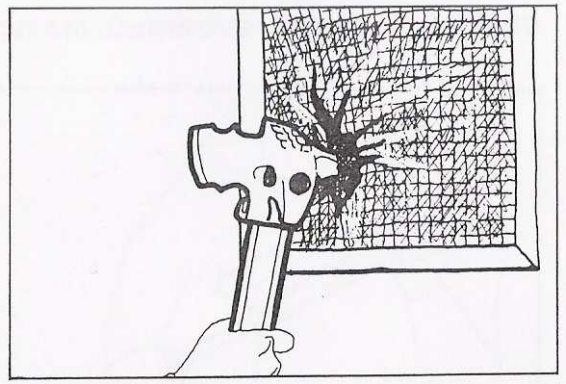
Making a hole with the chopping blade on the multipurpose headpiece



Making a hole with the chopper on the opener, using the headpice as a stamper, opener safety off

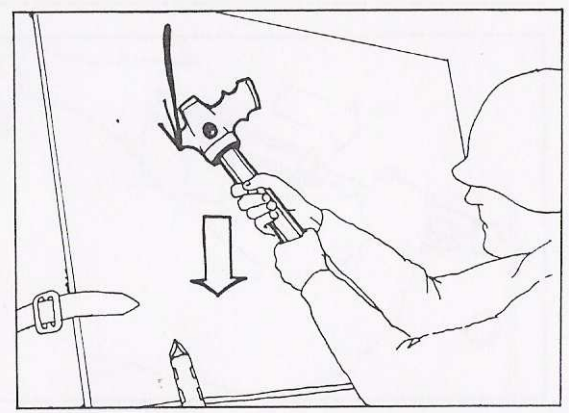


Smashing through reinforced glass with the barb on the opener

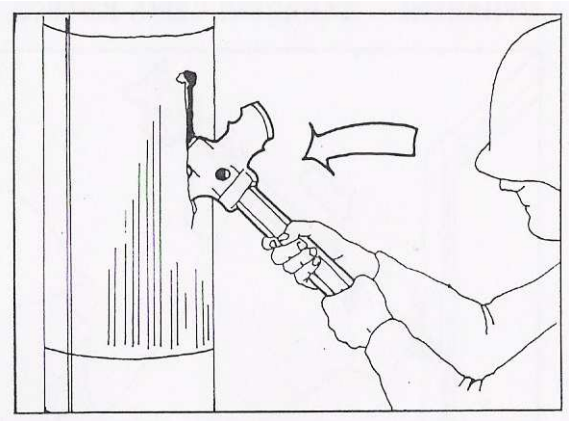


Cutting textiles, canvas, thin insulating materials

Cutting through textiles or other such materials with the edge under the barb

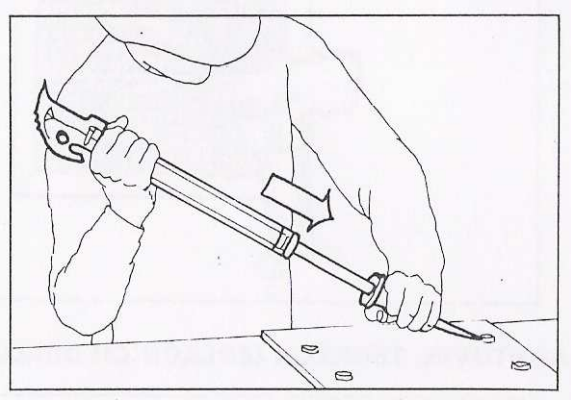


Smashing through thin insulating materials with the edge underneath the barb

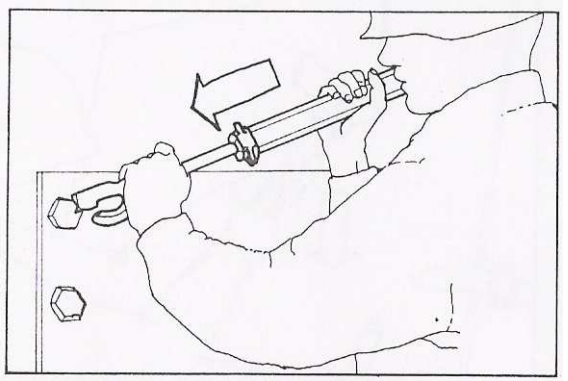


Chopping off of rivets, screws, releasing screw threads

Opener used as a chopper, headpiece with the handle as a stamper, safety off

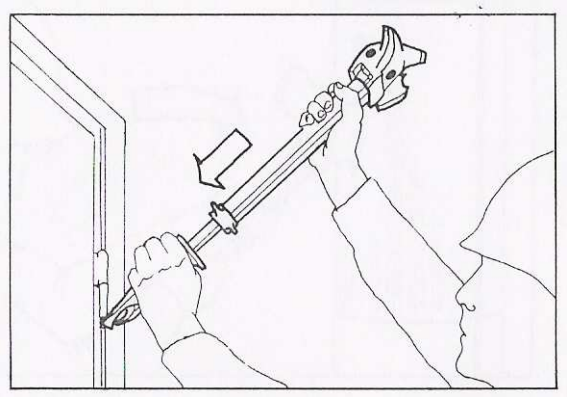


Releasing of nuts via the chopping part of the opener

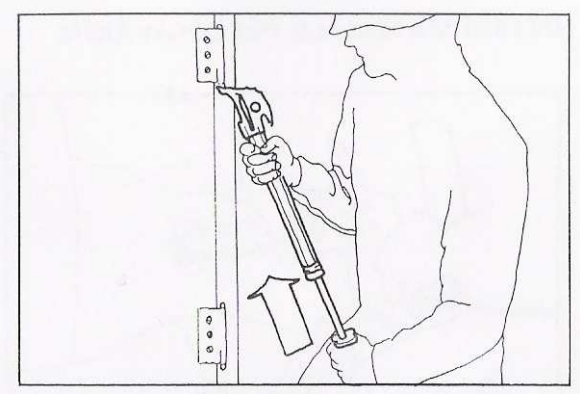


Knockin out / knocking in of hinges, etc.

Knockin out of hinges with the chopper and the headpiece, safety off



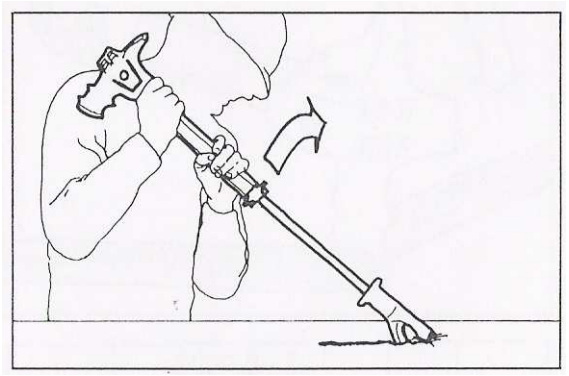
Ramming of sticks with the use of the headpiece and the opener, safety off



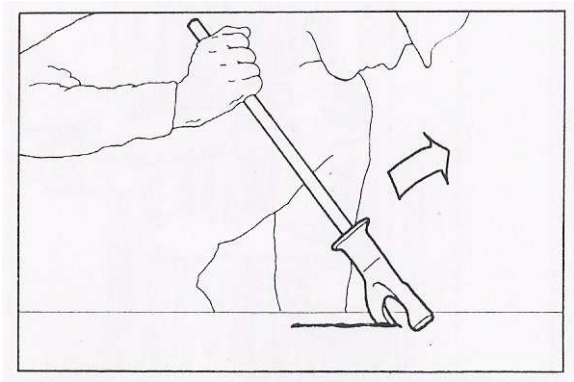
Separating sheet metal with the opener, enlarging holes/openings

Slide the opener blade into the opening and cut the material by turning and sliding of the tool.

Separation of sheet metal with the opener used with the rest of the tool, opener safety off

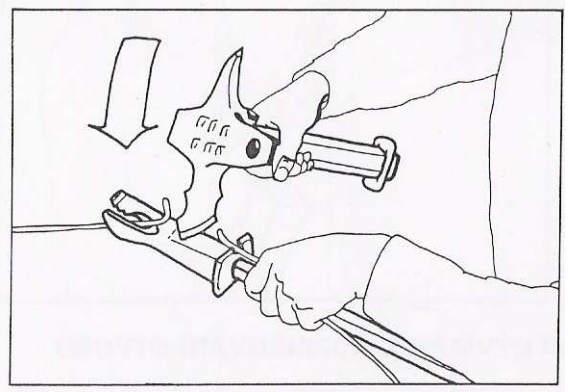


Separation of thin sheet metal with the opener itself

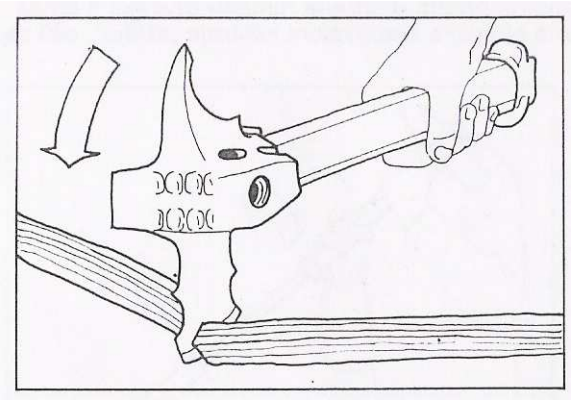


Separation of materials via chopping

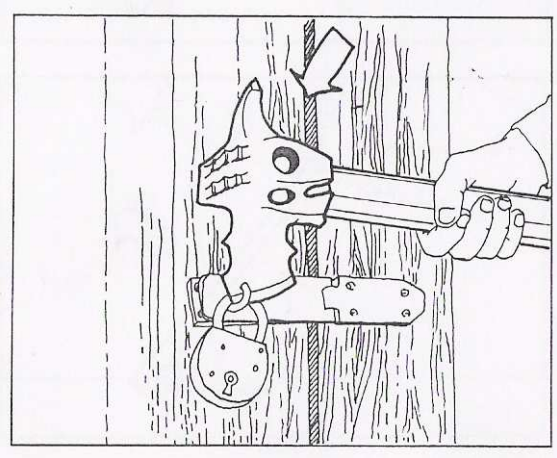
Separation of wires etc. on the flat surface of the opener



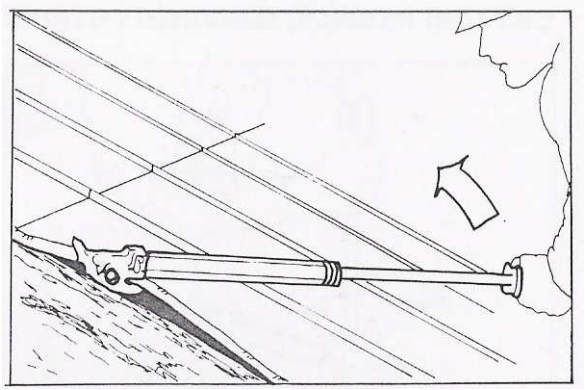
Separation of hoses, wires, cables etc. on a hard surface



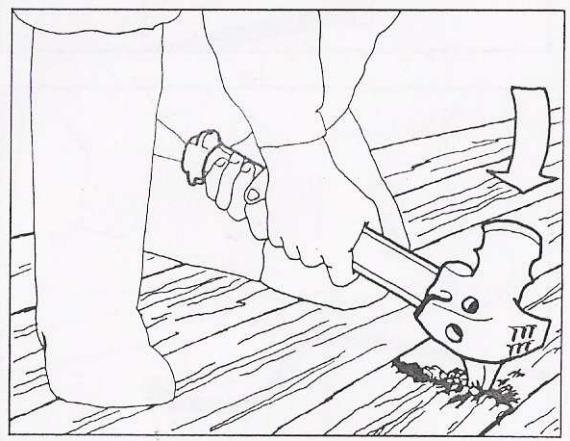
Prying open a lock



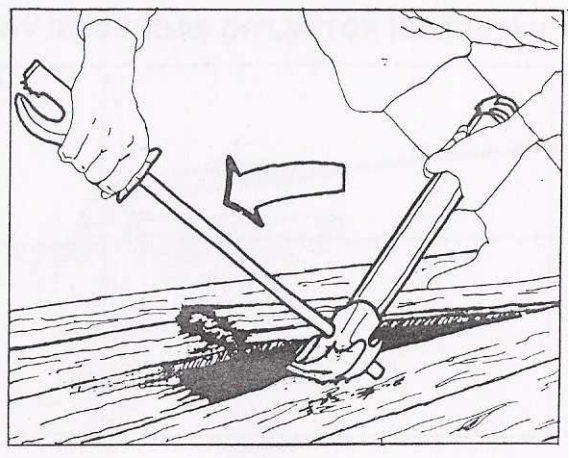
Taking down sheet metal roofing



Separation of wooden beams with the barb

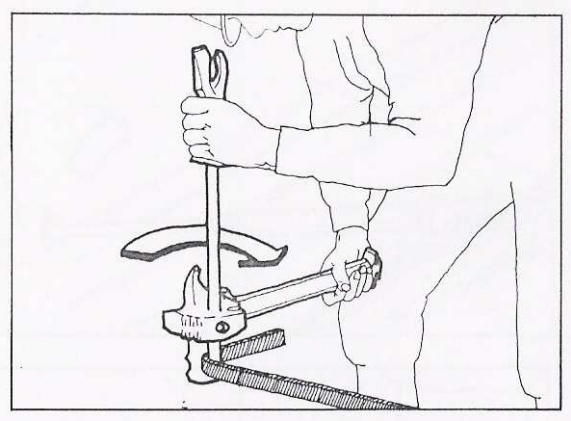


Levering with the use of the headpiece and the inserted lever of the opener – increased levering force

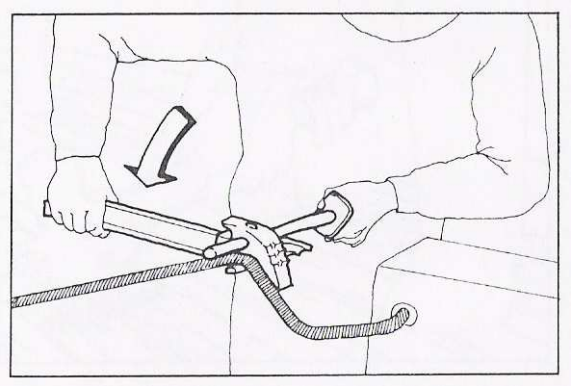


<u>Bending of profiles, closure of pipes</u>

Bending around the opener lever inserted into the multipurpose headpiece

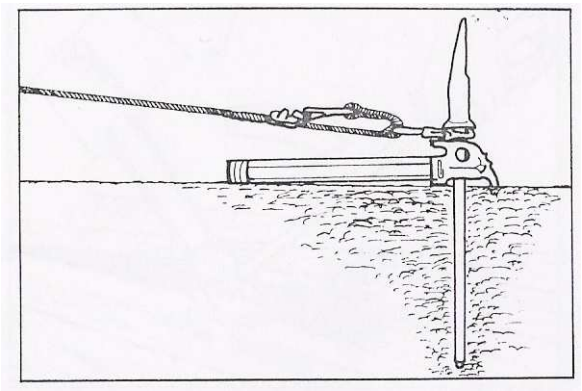


Closure of pipes by pressing between the barb and the opener lever

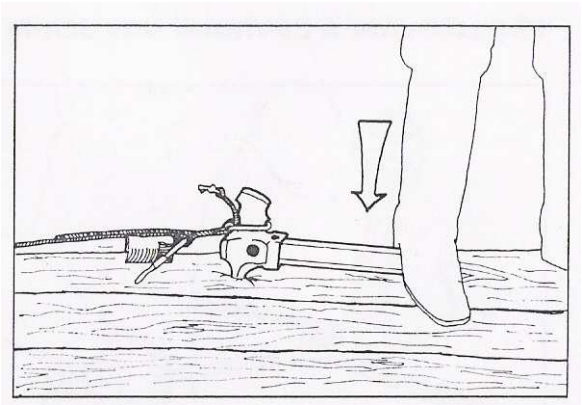


Making and anchor / securing ropes etc.

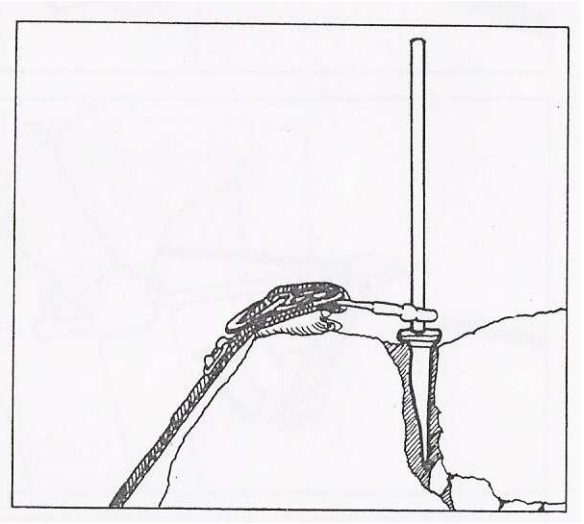
Opener as an anchor in soft ground, multipurpose headpiece secures the anchor and prevents slipping out



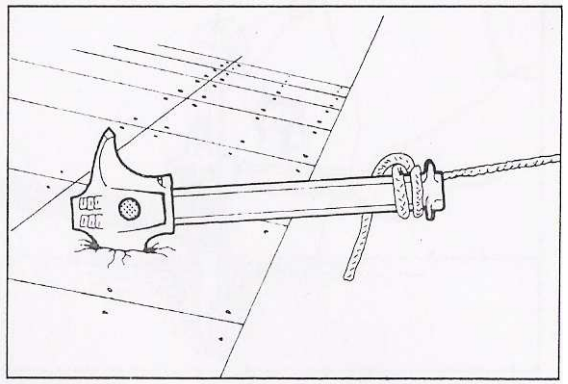
Multipurpose headpiece as an anchor in wood. Secured via weight placed on the handle



Opener as an anchor in a crevice

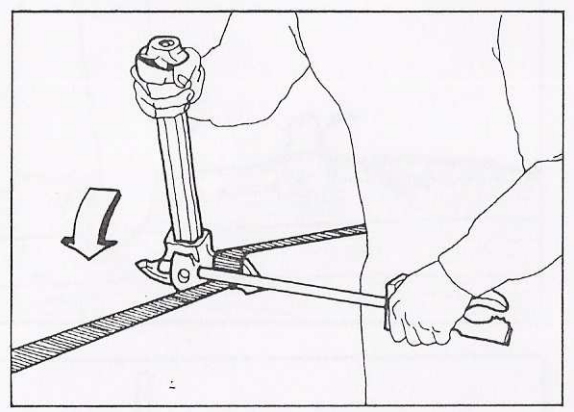


Multipurpose headpiece as an anchor, fixing the rope via the rim of the handle

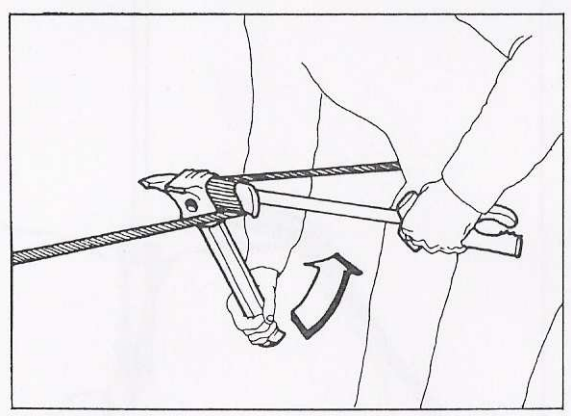


<u>Pulling closer / building tension / lifting via belts and ropes</u>

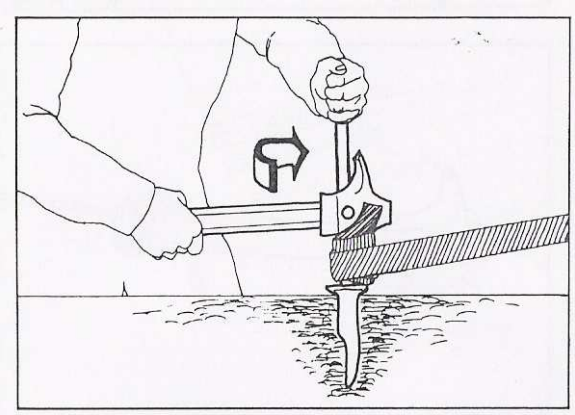
Fixture of a rope/wire between the opener lever and the multipurpose headpiece



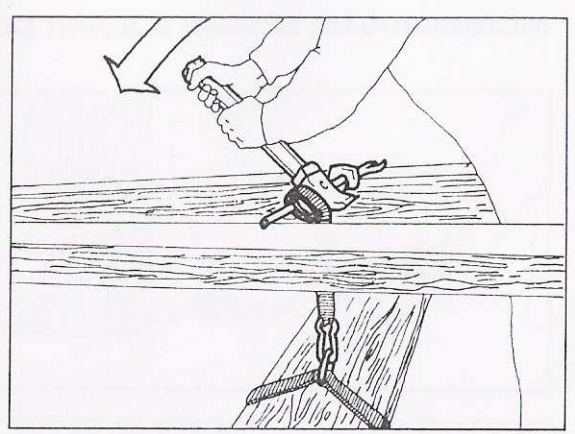
Reeling on the headpiece, axis force on the belt – 5 . 10 kN



Reeling on the headpiece starting at the free end, opener anchored

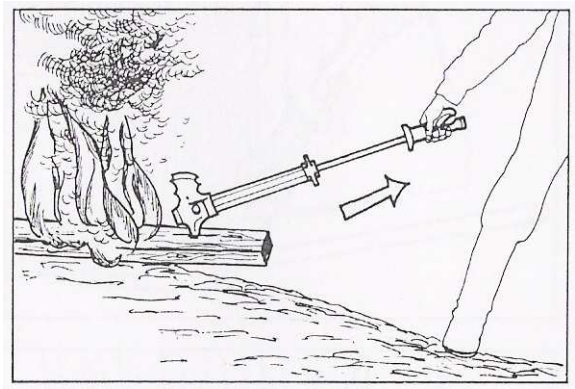


Lifting of heavy objects

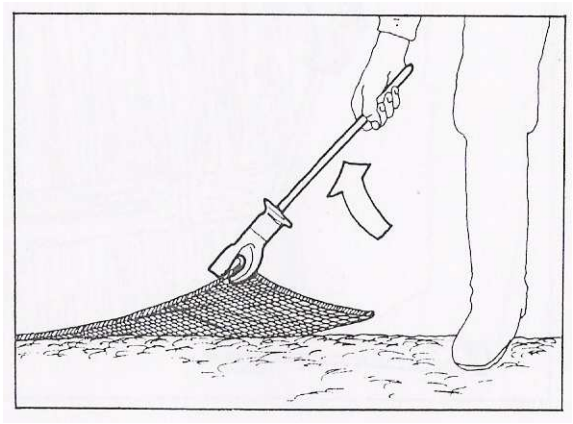


Dragging of beams, sheet metal, etc.

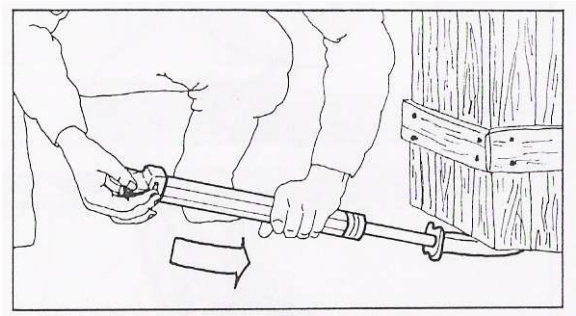
Dragging of wooden beams with the tool driven into the beam, safety off

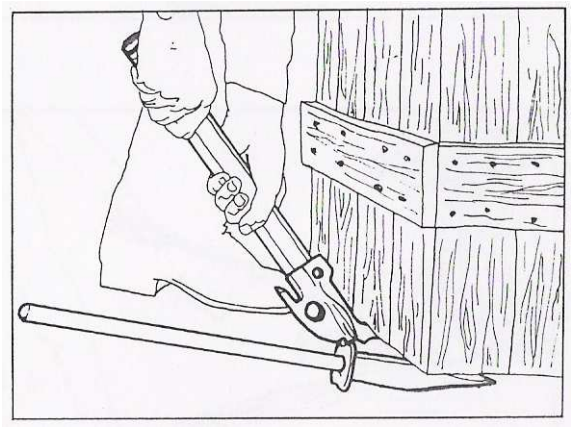


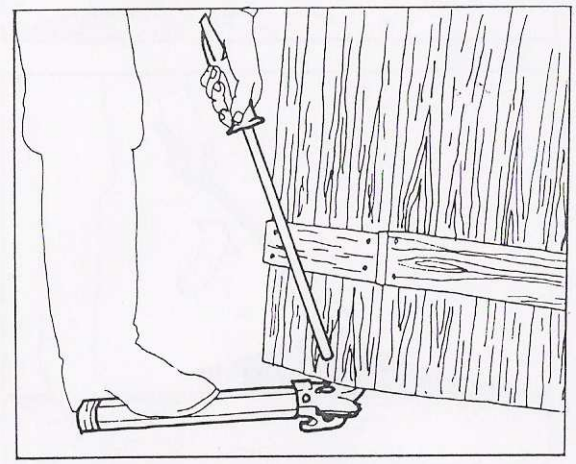
Dragging of sheet metal with the help of the opener

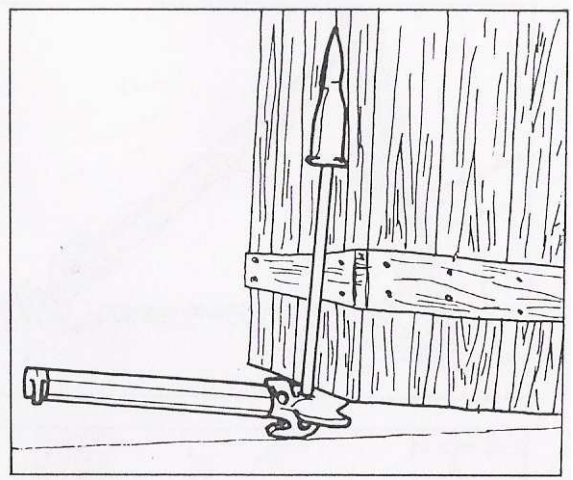


Lifting up and securing heavy loads

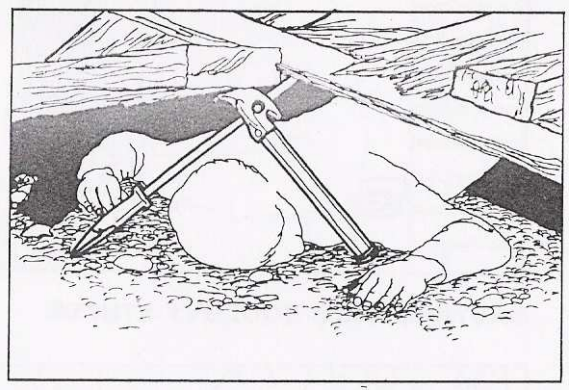


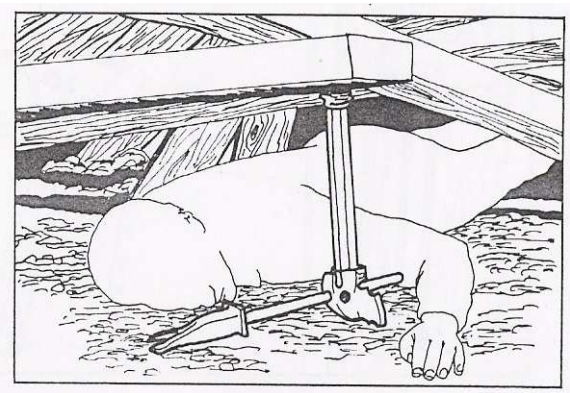


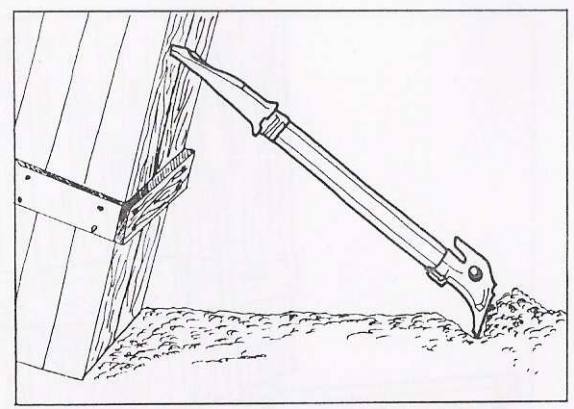


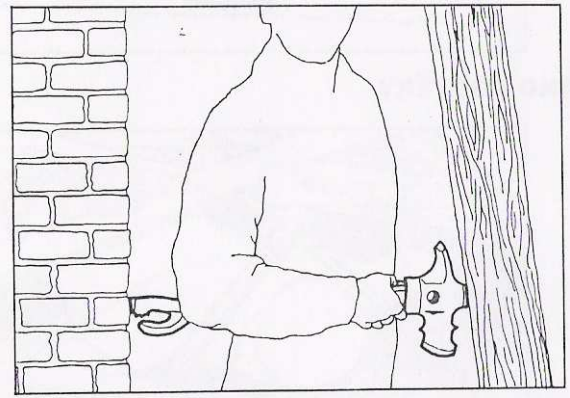


Use of the tool as a support

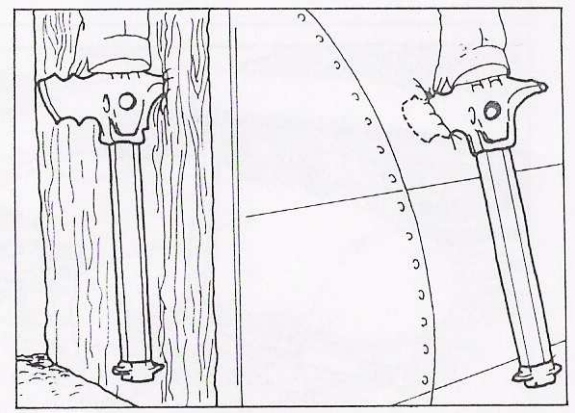






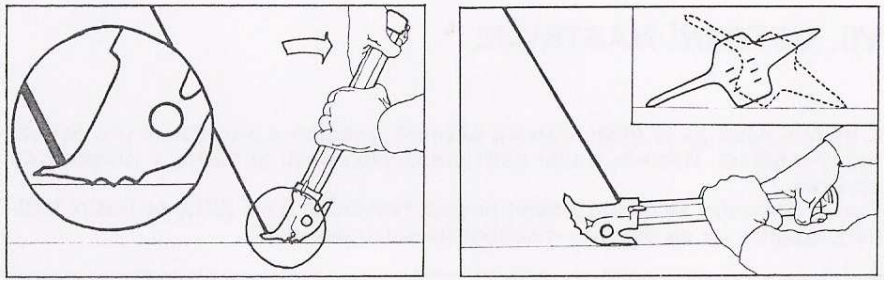


The tool as a makeshift step



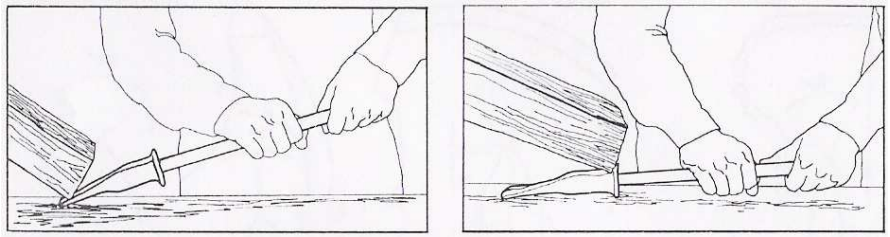
V. Tool security features

Besides the universality of the tool, the security of the individual working with the tool was also considered during the design process.



There is a large rim on the opener in the direction of the lever, preventing any injury to the hands. The barbs on multipurpose headpiece feature a security rim. The safety switch/pin ensures the tool stays compact and prevents arbitrary siding out of the opener out of the handle thus protecting the worker from injury do to a fall of the tool's part. The tool handle features a plastic coating which absorbs shocks. The tool is made of high quality steel. This ensures

the tool will not shatter while remaining strong and sharp for a long time.

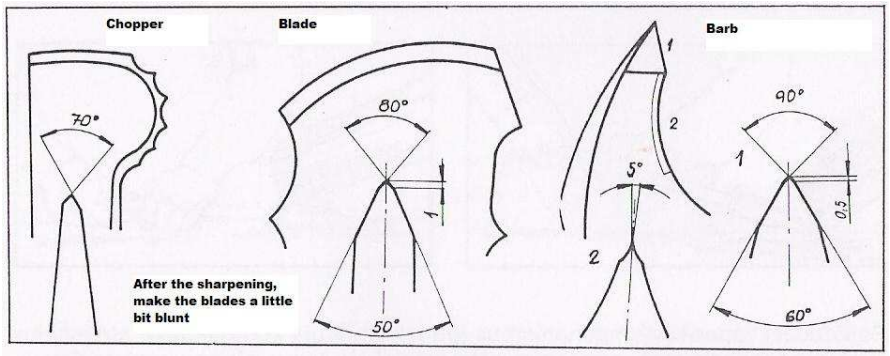


VI. Maintenance

The anticorosive surface coating protects the tool from oxidation, i.e. rusting. A solid lubricant is used in the safety mechanism which is also made from stainless steel. Given these circumstances, the tool does not require any special kind of maintenance. The tool may be cleaned with all common types of cleaners, except those on the basis of chlorine. This exception pertains to the cleaning of the plastic coating on the handle. Remove any dirt off the belt after each use. The belt should be dried and stored in a dry environment with the maximum 90% relative humidity.

VII. Sharpening the tool

To sharpen the tool, you may utilize any common processes and means of sharpening manual/handheld tools. For the shape and measurement details of the edges, see figures below. Attention! The sharpening process must not change the mechanical attributes of the blades, i.e. the edges may not be annealed as the heat would change the mechanical properties of the material.



Warranties

Warranties are governed by the pertinent sections of the Czech Commercial Code provided that basic storage and maintenance conditions shall be met and the maximum technical parameters as specified in this manual shall not be exceeded.

Disclaimer

The manufacturer is not and shall not be liable for providing compensation for any direct or indirect damages or injuries to persons which could have resulted from the use of the multipurpose manual rescue tool save for those covered by the warranties.

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