

UNITED STATES PATENT OFFICE

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TOOL

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2 Claims. (Cl. 81—18)

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My invention relates to new and useful improvements to a tool of the class comprising relative movable jaws, for gripping or operating upon an object located between them, and handles for relatively actuating the jaws.

An important object of my invention is to provide a tool of the class referred to which will permit a wide movement of the jaws for a relatively smaller movement of the handles actuating the jaws.

A further object of my invention is to provide such a tool that will permit heavy pressure to be exerted upon an object, held between its jaws, by means of the lever action of the handles.

Other objects and advantages of my invention will be apparent during the course of the following description:

In the accompanying drawing, forming a part of this specification, the figure is a side view of a tool embodying my invention.

In the drawing, where for the purpose of illustration, is shown a preferred embodiment of my invention, the numbers 1 and 2 represent movable jaws containing opposed gripping edges 3 and 4. The edges 3 and 4 may be shaped to any desired form to suit the use to which the tool will be put; for instance, they may be serrated, or they may be squared, or they may be any other shape. The jaw 1 forms the outer end of a lever 5 which is made integral with a ratchet or curved toothed sector 6 and has a handle 7 at its opposite end. The jaw 2 forms the outer end of a lever 8 which is attached to the lever 5 with a pivot 9. The lever 8 is slotted to receive the ratchet or toothed sector 6. A leaf spring 10 is attached to the lever 5 by a screw 11 and functions to keep the levers 5 and 8 separated. A handle 12 is attached to the lever 8 by a pivot 13 and has a pawl 14 attached to its inner end at a pivot 15. The pawl 14 is held against a stop 16 by a leaf spring 17. A coil spring 18 is interposed between the lever 8 and the handle 12.

The operation of the tool is as follows: The object to be gripped is inserted between the jaws 1 and 2 and the handles 7 and 12 are moved towards each other by applying external force. As the spring 10 is weaker than the spring 18 this force applied to the handles 7 and 12 will cause the lever 8 to swing about the pivot 9 and result in the jaws 1 and 2 approaching each other. When the edges 3 and 4 of the jaws 1 and 2 take up against the object to be gripped, the movement about the pivot 9 will cease and the handle 12 will swing about the pivot 13. The resultant motion imparted to the end 12' of the handle 12 will permit the force of the spring 17 to act upon the pawl 14 and to cause the pawl 14 to pass the stop

16 and into engagement with the teeth on the ratchet or sector 6. Further movement of the handle 12 will give a lever movement to the lever 8 with the pawl 14 as a center.

In order to free the grasped object from between the jaws 1 and 2, the pressure upon the handle 12 is relieved. This permits the spring 18 to act upon the handle 12 forcing it to swing about the pivot 13 away from the lever 8 and causes the end carrying the pawl 14 to withdraw the pawl from engagement with the ratchet or toothed sector 6; and on disengagement of the pawl, permits the spring 10 to act upon the lever 8 thereby forcing it to swing about the pivot 9 and away from the lever 5.

It is to be understood that the form of my invention, herewith shown and described, is to be taken as a preferred example of the same, and the various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subject claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A tool comprising two branches constituting jaws at one end and pivoted at the other end, a spring means for separating the two branches, a curved toothed sector so carried by one of the branches as to fit into a slotted portion of the other branch, a handle pivoted to the other branch and carrying an extension beyond the pivot, a spring actuated pawl pivoted on said extension and arranged so that the pawl may be caused to engage the teeth of the curved toothed sector, and a pawl stop for preventing such engagement when it is not desired, and a spring means for separating this handle from the branch to which it is pivoted.

2. A tool comprising two branches constituting jaws at one end and pivoted at the other end, a spring means for separating the two branches, a curved toothed sector so carried by one of the branches as to fit into a slotted portion of the other branch, a handle pivoted to the other branch and carrying an extension beyond the pivot, a spring actuated means pivoted on said extension and arranged so that it may be brought into engagement with the teeth of the curved toothed sector, and a stop for preventing such engagement when it is not desired, and a spring means for separating this handle from the branch to which it is pivoted.

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