Oct. 11, 1949. J. C. MALEN 2,484,043

PULLING AND PUSHING DEVICE

Filed Nov. 26, 1945

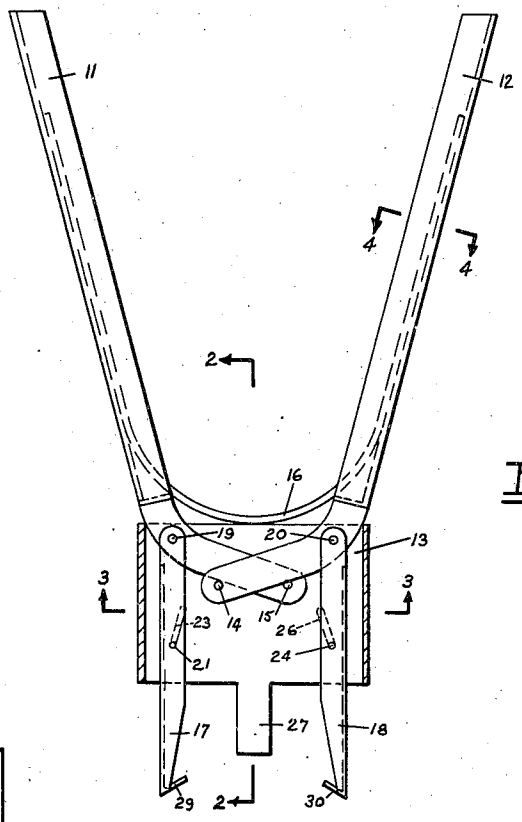


Fig. 1

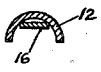


Fig. 4

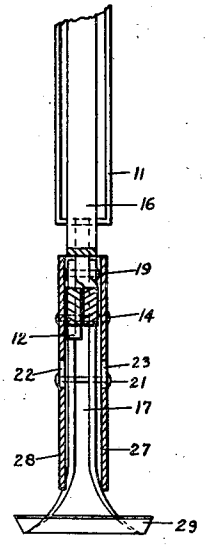


Fig. 2

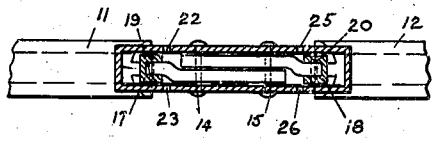


Fig. 3

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PULLING AND PUSHING DEVICE

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2 Claims. (Cl. 29—268)

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

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This invention relates to a pushing and pulling device and more particularly to a device for removing bottle caps, gears and bearings from associated structure, or for inserting keys, pins and bushings relative to associated structure.

An object of this invention is to provide a device having a portion for gripping and exerting a pull on the outer edges of an object, while another portion of the device exerts a pushing force on the central portion of the object.

Another object is to provide a device for removing bottle caps, gears, bearings and other similar objects from associated structure.

A still further object is to provide a device for inserting keys, pins, bushings and similar objects relative to associated structure.

Further objects and advantages of this invention, as well as its construction, arrangement and operation, will be apparent from the following description and claims in connection with the accompanying drawing, in which,

Fig. 1 is a front elevational view of a preferred embodiment of the present invention with one side of the body portion broken away to show the operating mechanism.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

A preferred embodiment of the present invention is shown in the figures wherein the handles 11 and 12 are rotatably connected to the box-shaped body portion 13 by means of pins 14 and 15, the handles 11 and 12 being maintained in an open position by means of spring 16. Two arms 17 and 18 are rotatably connected to the handles 11 and 12 respectively by means of pins 19 and 20. Pin 21 extends through the arm 17 and through slots 22 and 23 in the side walls of the body portion 13. Pin 24 similarly extends through the arm 18 and through slots 25 and 26. Pins 21 and 24, riding in the slots, guide the arms 17 and 18 in an upward and inward movement. Two depending fingers 27 and 28 are formed centrally on the lower edges of the side walls of the body portion 13. The arms 17 and 18 have gripping jaws 29 and 30 respectively formed on the lower portion. The jaws 29 and 30 can be shaped to conform to the object on which they are being used.

In using the device to remove a bottle cap the device is held in such a manner that the fingers 27 and 28 engage the top of the bottle cap and

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the jaws 29 and 30 engage the lower skirt of the bottle cap. When the handles are pressed together, the skirt is bent upwardly and the bottle cap disengaged from the top of the bottle.

In using the device to remove a gear or bushing the fingers 27 and 28 press against the shaft while the jaws 29 and 30 engage the gear or bearing and exert a pulling force thereon. In using the device for inserting keys, pins and bushings, the jaws 29 and 30 are used to maintain a grip on the object while the fingers 27 and 28 press the key, pin or bushing into position.

The shape, size and relative position of the various parts can be altered to suit the particular objects on which the device is used. Likewise, the length and angle of the slots 22, 23, 25 and 26 can be varied to suit the particular requirements of the work on which the device is being used.

Modifications and changes can be made in the above described device without departing from the spirit and scope of this invention as set forth in the appended 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.

What is claimed is:

1. A pulling and pushing device comprising a body, a portion on said body for engaging a workpiece, a pair of handles individually hinged on said body and extending away from said portion in opposed relation, said handles being hinged each for rotation about an individual fixed axis on said body, a pair of hinges one on each of said handles on the side of the handle axis away from said portion and located so that upon movement of said handles toward each other said hinges move arcuately about the axis toward each other and away from said portion, a pair of arms mounted one on each of said pair of hinges and extending toward said portion in opposed relation for engaging the periphery of a workpiece, said body being formed with a separate substantially straight slot adjacent each arm extending substantially in the direction of the arcuate movement path of the hinge supporting such arm, said slots converging toward each other in a direction away from said portion, and a pin on each arm extending into the adjacent slot, said slots and pins serving to guide said arms for substantially translational movement.

2. A pulling and pushing device for use in removing bottle caps, said device comprising a

body, a finger projecting from said body for engaging a bottle cap, a first pair of hinges on said body each providing an individual fixed axis relative to the body, a pair of handles mounted one on each of said first pair of hinges and extending away from said finger in opposed relation whereby said handles are adapted for movement toward and away from each other, a second pair of hinges one on each of said handles on the side of the handle axis away from said finger so that upon movement of said handles toward each other said second pair of hinges move arcuately toward each other and away from said finger, a pair of arms mounted one on each of said second pair of hinges and extending toward said portion in opposed relation for engaging a workpiece, said body being formed with a pair of substantially straight slots one adjacent each of said arms, said slots converging away from said finger, the slot adjacent each arm extending

substantially in the direction of the arcuate movement path of the hinge supporting such arm, and a pair of pins one on each of said arms extending for sliding movement into the adjacent slot, said slots and pins serving to guide said arms for substantially translational movement.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,521,786	Moss	Jan. 6, 1925
1,853,846	Borchert	Apr. 12, 1932
1,879,099	Coffey	Sept. 27, 1932
1,962,814	Gilstrap et al.	June 12, 1934
2,037,834	Sutherland	Apr. 21, 1936
2,415,896	Marsh et al.	Feb. 18, 1947