March 15, 1955 A. M. OLSON 2,704,199

JACK

Filed Aug. 27, 1953 2 Sheets-Sheet 1

Fig. 1

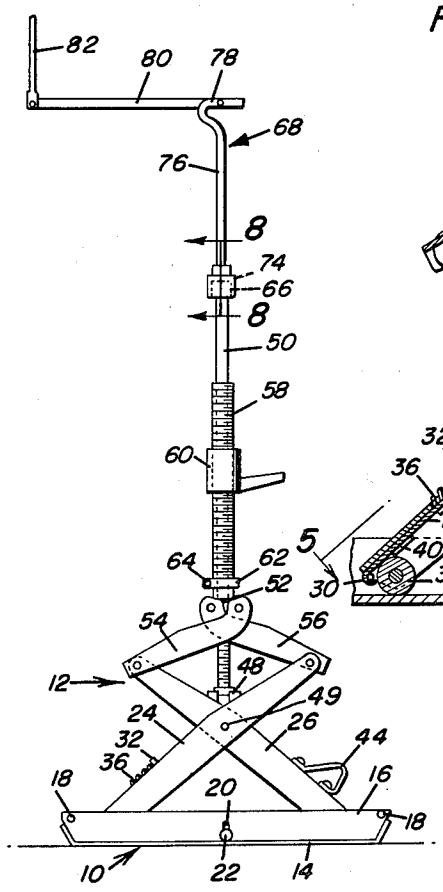


Fig. 4

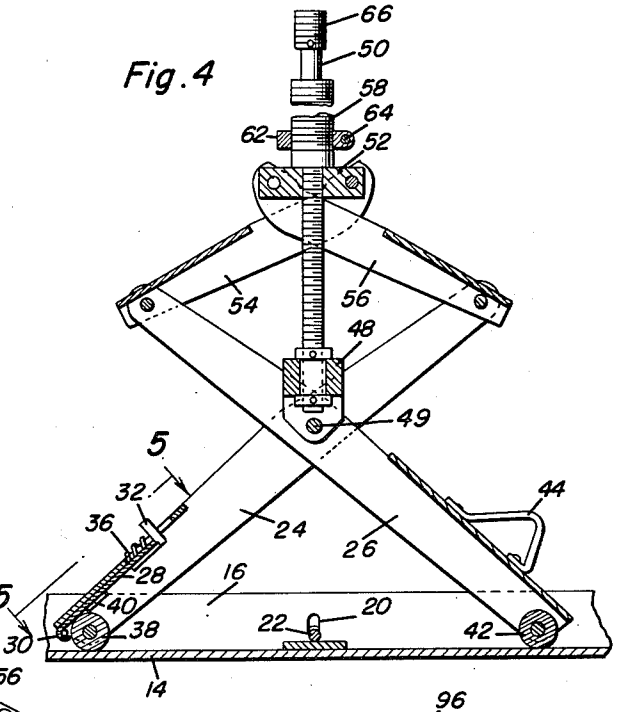


Fig. 7

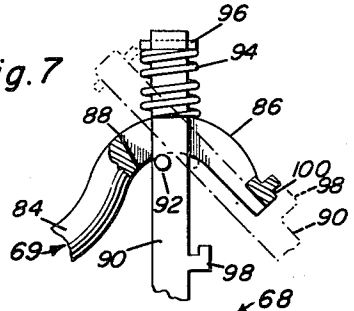


Fig. 5

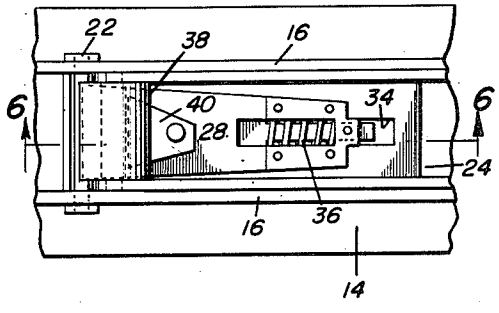
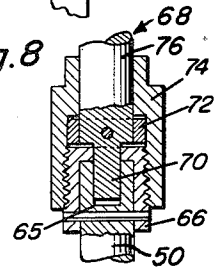


Fig. 8



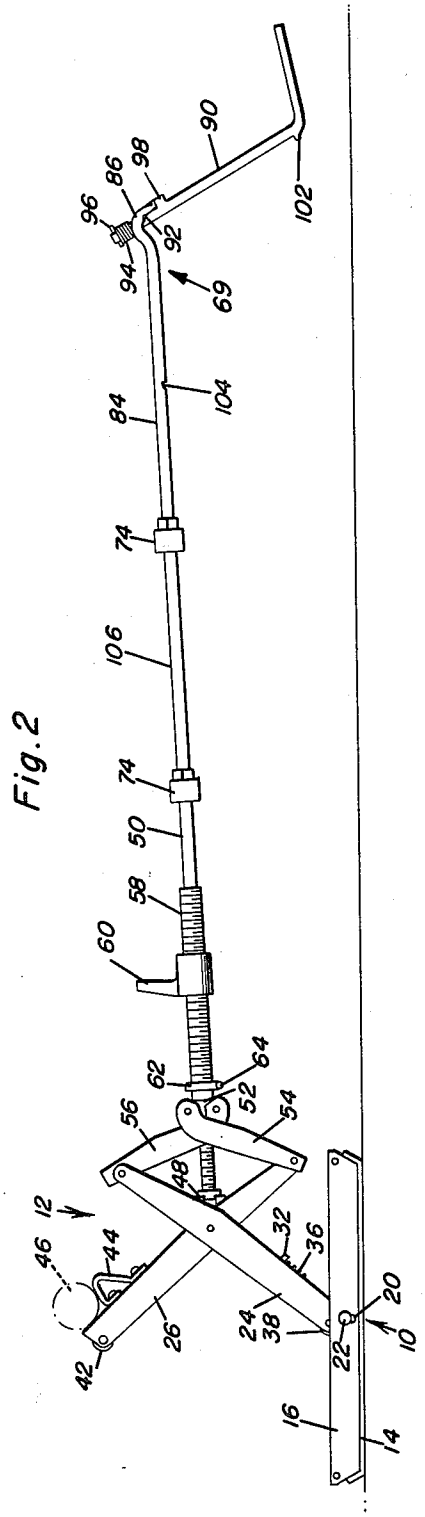
Alton M. Olson
INVENTOR.

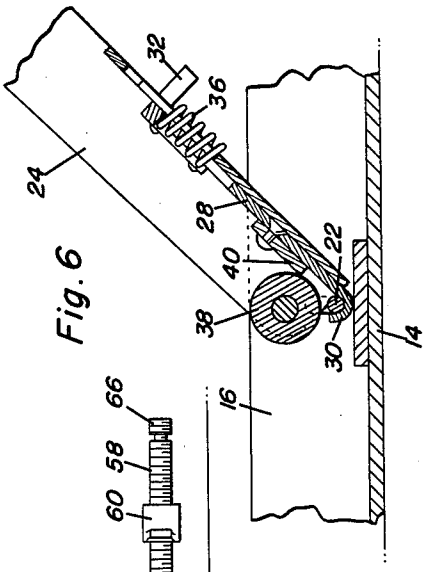
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

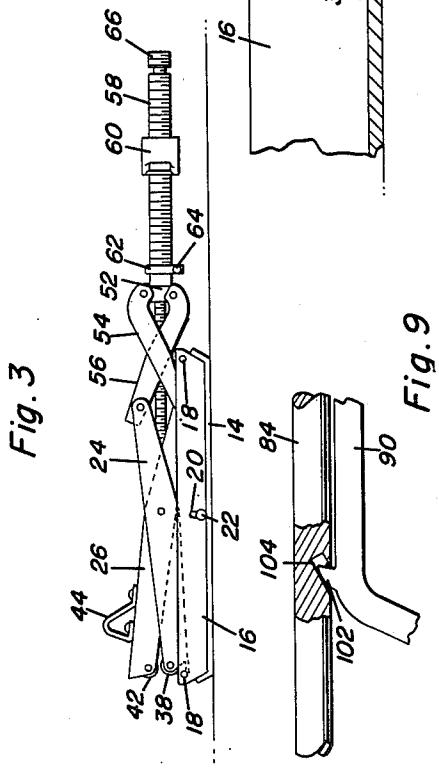
March 15, 1955 A. M. OLSON 2,704,199

JACK

Filed Aug. 27, 1953 2 Sheets-Sheet 2







Alton M. Olson
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 2,704,199 Patented Mar. 15, 1955

2,704,199

JACK

Alton M. Olson, Seattle, Wash.

Application August 27, 1953, Serial No. 376,810

9 Claims. (Cl. 254—122)

This invention relates to a new and useful improvement in a jack and more particularly to a jack which can be used either as a bumper jack or an axle jack.

An object of this invention is to provide a jack which is collapsible and which is easily assembled and is strong and efficient in use.

Another object of this invention is to provide a jack which can be used either as a bumper jack or an axle jack without requiring the disassembly of the device to convert from one type to the other.

A further object of this invention is to provide a jack having a novel connection between the lift structure and the base member.

A still further object of the present invention is to provide a jack having an improved connection between the lift operating shaft and a handle.

A still further object of the present invention is to provide an improved handle for a jack which is resiliently maintained in its collapsed and operative positions.

A yet further object of the present invention is to provide an improved handle for a jack which is capable of making half turns without being disconnected from the jack.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the preferred form of the present invention showing the jack being used as a bumper jack;

Figure 2 is a side elevational view of the preferred form of the present invention showing the device used as an axle jack and employing a modified form of handle;

Figure 3 is a side elevational view of the device forming the present invention showing the device in collapsed position;

Figure 4 is a vertical sectional view of the preferred form of the present invention shown in Figure 1;

Figure 5 is an end view of a preferred form of the present invention taken substantially along line 5—5 of Figure 4;

Figure 6 is a sectional view taken substantially along the section line 6—6 of Figure 5;

Figure 7 is a side view partly in section of the connecting means between the two parts of the handle shown in Figure 2;

Figure 8 is a sectional view taken substantially along the section line 8—8 of Figure 1; and,

Figure 9 is a view partly in section showing the retaining means for retaining the handle of Figure 2 in its collapsed position.

Referring now more specifically to the accompanying drawings it will be seen that the improved jack forming the subject of this invention includes, as shown in Figure 1, a U-shaped base member **10** and a lift mechanism **12**.

The base member **10** is formed of a web portion **14** and a pair of upwardly extending flanges **16** spaced inwardly from the edges of the web portion **14**. Pins **18** extend between the upwardly extending flanges **16** adjacent the ends thereof. A vertically extending slot **20** is provided in each of the upwardly extending flanges **16** adjacent the midpoint thereof and a pin **22** is mounted in the slots **20** for vertical movement therein.

The lift mechanism **12** comprises a first link member

24 pivotally secured to the base member **10**. The link **24** can be secured to either of the pins **18** or the pin **22** as desired. A link **26** is pivotally secured adjacent its midpoint to the link **24**. The pivotal connection to the link **24** is also at a point adjacent its midpoint. Each of the links **24** and **26** comprises a pair of side members having a web portion extending between the side members adjacent one end thereof, which end shall be called the lower end for purposes of clarity.

A member **28** is slidably mounted on the web portion of link member **24**. The lower end of member **28** is provided with a hook or curved portion **30** which engages around a desired one of the pins **18** and **22** which locks the pin against the lower end of link member **24**. The member **28** is provided with a flange **32** which extends through a slot **34** in the web portion of link member **24**. A spring **36** is disposed between one end of the slot **34** and the flange **32** to urge the member **28** along the web of link **24** in a direction away from the end of link **24** toward the pivot point of legs **24** and **26**. To release the link member **24** from one of the pins **18** and **22** the flange **32** is pushed toward the end of the link member **24** against the action of the spring **36** thereby allowing room to remove the pin from between the hook portion **30** and the end of the link member **24**.

The link member **24** is provided with a roller **38** mounted between the leg members thereof adjacent the lower end, and slide member **28** is provided with a raised portion **40** mounted thereon which engages with roller **38** to maintain the slide member **28** against the web portion of link member **24**. Thus when the link member **24** is in the position shown in Figures 2 and 6 the slidable member **28** cannot move away from the web portion of the link member **24**.

The lower end of link member **26** is provided with a roller **42** mounted between the legs thereof, which roller is adapted to roll upon the web portion **14** of the base member **10** when the jack is in the position shown in Figures 1 and 4. The web portion of link member **26** is provided with a projection **44** which forms the support for an axle **46** when the jack is in the position shown in Figure 2.

A collar member **48** is secured to the pivotal connection at pin **49** of link members **24** and **26**. A shaft **50** has one end rotatably mounted in the collar **48**. The shaft **50** is provided with a threaded portion adjacent the end rotatably supported in the collar **48**. A collar **52** having a threaded aperture therein is received on the threaded portion of shaft **50**. A pair of links **54** and **56** are connected between the upper ends of links **24** and **26** respectively and the collar **52**. Downward movement of the collar **52** on the shaft **50** will cause the links **54** and **56** to spread the upper ends of links **26** and **24** and thereby cause the lower end of link **26** to move away from the lower end of link **24** which is pivotally secured to the base member **10**.

A tubular member **58** is slidably and rotatably mounted on the shaft **50** between the collar **52** and the end opposite the collar **48**. The tubular member **58** is provided with screw threads on the outer surface thereof and a lift member **60** having a threaded aperture therein is mounted thereon. By turning the lift member **60** on the tubular member **58** the lift member **60** is caused to move axially along the tubular member **58**. The end of tubular member **58** adjacent the collar **52** is provided with a collar **62** fixedly secured thereto. The collar **62** has a leverage bar **64** mounted thereon. Thus, when the jack is to be used as a bumper jack as shown in Figure 1, the lift member **60** is first moved along the tubular member **58** to come in contact with the bumper, then the leverage bar **64** and collar **62** are turned thereby turning tubular member **58** with respect to member **60** and causing the lift member **60** to exert additional pressure against the bumper of the vehicle to be lifted.

The end of the shaft **50** opposite the connection to collar **48**, is provided with a transverse slot **65** at the end thereof. A collar **66** is secured to the end of the shaft **50** adjacent the slot **65**. The collar **66** is provided with screw threads along the outer surface thereof.

A handle is adapted to be secured to the shaft **50** at the end having the slot therein. The handle is composed

of at least two members secured together. Two types of handles as indicated by reference numerals **68** and **69** are disclosed in the present invention. The connection between the two types of handle and the shaft **50** is the same in both instances. This connection comprises a projection **70** mounted at one end of the handle **68** and a collar **72** fixedly secured to the handle adjacent the projection **70**. The collar **72** is of a less diameter than the collar **66** on shaft **50**. The collar **72** is adapted to abut the outer end of the collar **66**. A slidable collar **74** is mounted on the handle **68** and overlies the collar **72**. The inner surface of collar **74** is provided with threads which engage the threads on collar **66** for securing the handle on the shaft **50**.

Referring now to Figure 1 the handle **68** comprises a first longitudinal member **76** having the connecting means at one end and a curved portion **78** at the other end. The curved portion **78** is slotted through a substantial portion thereof. A second longitudinal member **80** is pivotally mounted in the slot in the curved portion **78** of member **76** and is capable of movement through 180° with respect to member **76**. A third longitudinal member **82** has a bifurcated end which is received over an end of member **80** and is pivotally secured thereto. The member **82** is capable of movement through 180° with respect to member **80**. Thus, when the jack is used where there is a projection which prevents a complete turning of the handle **68** through 360°, a half turn can be made and the members **80** and **82** can be moved to the opposite position and another half turn can be made.

The handle **68** as shown in Figure 2 is composed of a first longitudinal member **84** having connecting means at one end and a curved portion **86** at the other end. The curved portion **86** is provided with a slot **88** through a substantial portion thereof as shown in Figure 7. An L-shaped member **90** has one end thereof received in the slot **88** in member **84**. A pin **92** extends through L-shaped member **90** adjacent the end received in slot **88** and engages the inner side of curved portion **86**. A spring **94** is disposed on member **90** and engages the outer side of the curved portion **86**. A pin **96** extends through the end of member **90** and retains the spring **94** thereon. A projection **98** is mounted on one side of member **90** and spaced from the pin **92** in a direction away from the spring **94**. This projection **98** is adapted to engage a notch **100** on the end of curved portion **86** to retain the member **90** in operative position with respect to member **84**. A projection **102** is provided on the other side of member **90** and spaced from the end carrying the spring **94**, which projection **102** is adapted to engage in a recess (Figure 9) **104** in member **84** to retain the member **90** in a fixed position with respect to member **84** when the handle is collapsed. Thus, when it is desired to move the member **90** from its collapsed position to its operative position, the member **90** is moved against the action of spring **94** thereby releasing the projection **102** from the recess **104**, then the member **90** is pivoted in the slot **88** and the projection **98** is brought into contact with the notch **100** at the end of curved portion **86**. The spring **94** serves to retain the member **90** in fixed position with regard to member **84**.

An extension member **106** is provided between the handle **68** and the shaft **50** when it is found that the length of shaft **50** and handle **68** makes it difficult to operate the jack. This extension **106** is provided with connections at its ends which correspond to the collars **66** and **74**.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, said base member comprising a U-shaped channel member having a plurality of pins extending between the leg portions thereof and spaced from the web portion thereof, said first link member having means thereon for pivotally connecting the same to a desired one of said pins.

2. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, said base member comprising a U-shaped channel member having a plurality of pins extending between the leg portions thereof and spaced from the web portion thereof, said first link member having means thereon for pivotally connecting the same to a desired one of said pins, said last means comprising a slidable member mounted on an end of the first link member, a hook on said slidable member extending beyond the end of said link member and adapted to secure a pin against the end of the link member, and spring means mounted on said link member and engaging said slidable member to urge the hook into engagement with one of said pins.

3. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, said base member comprising a U-shaped channel member having a plurality of pins extending between the leg portions thereof and spaced from the web portion thereof, said first link member having means thereon for pivotally connecting the same to a desired one of said pins, said shaft being provided with a tubular member slidably and rotatably mounted thereon adjacent the end opposite said first collar, said tubular member having threads along the outer surface thereof, a lift member having a threaded aperture therein received on said tubular member, and means secured to said tubular member for rotating the same with respect to the lift members.

4. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, said base member comprising a U-shaped channel member having a plurality of pins extending between the leg portions thereof and spaced from the web portion thereof, said first link member having means thereon for pivotally connecting the same to a desired one of said pins, said shaft being provided with a tubular member slidably and rotatably mounted thereon adjacent the end opposite said first collar, said tubular member having threads along the outer surface thereof, a lift member having a threaded aperture therein received on said tubular member, and means secured to said tubular member for rotating the same with respect to the lift members, said second link member having a free end, a roller rotatably mounted on said free end, said roller engaging the web portion of the base member when the shaft is in a vertical position.

5. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, said base member comprising a U-shaped channel member having a plurality of pins extending between the leg portions thereof and spaced from the web portion thereof, said first link member having means thereon for pivotally connecting the same to a desired one of said pins, said second link member having a free end, a projection on the upper side of the second link member adjacent the free end of the same, said projection adapted to support an axle thereon when the shaft is in a horizontal position.

6. A jack comprising a base member, a first link member pivotally secured at one end to said base member, a second link member pivotally secured to the first link member, said first and second link members being pivotally connected adjacent the midportions thereof, a first collar secured to the pivotal connection of the first and second link members, a shaft rotatably mounted at one end in said collar, said shaft being threaded along a substantial portion thereof, a second collar having a threaded aperture therein received on said shaft, links connecting one end of each of said first and second link members to said second collar, means including a handle removably connected to the end of said shaft opposite the first collar, a connection between the handle and the shaft comprising a slot in the end of said shaft, a collar secured to the end of said shaft surrounding the slot, threads on the outer surface of said collar, a projection on the end of the handle received in said slot, a collar fixedly secured to said handle adjacent the projection thereon, said collar abutting the end of said shaft,

a slidable collar mounted on said handle having threads on the inner surface thereof, slidable over said fixed collar and adapted to be screwed over the collar secured to the end of the shaft.

7. The combination of claim 6 wherein the handle comprises a longitudinal member having connection means at one end and a curved portion at the other end, said curved portion being provided with a slot therethrough, an L-shaped member having one end received in said slot, a pin extending through said member spaced from the end thereof and engaging the inner side of said curved portion, a spring on said end of the member and engaging the outer side of said curved portion.

8. The combination of claim 7 wherein said L-shaped member is provided with a first projection adjacent the end thereof and adapted to engage the end of the curved portion to retain the members in one fixed position and said L-shaped member is provided with a second projection spaced from said first projection which is adapted to engage in a recess in said longitudinal member for retaining the members in another fixed position.

9. The combination of claim 6 wherein said handle comprises a first longitudinal member having connecting means at one end and a curved portion at the other end, said curved portion having a slot therein, a second longitudinal member pivotally mounted at one end in said slot, said second member being capable of movement of 180° with respect to the first member, a third longitudinal member having a bifurcated end pivotally secured to the other end of said second member, said third member being capable of movement of 180° with respect to the second member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,982,642	Curok	Dec. 4, 1934
2,071,470	Marlowe	Feb. 23, 1937
2,470,105	Murphy	May 17, 1949
2,508,934	Berg	May 23, 1950