Aug. 13, 1929. C. M. CHAMBERLAIN 1,724,694

HINGE JOINT FOR CONNECTING LONGITUDINAL MEMBERS

Filed July 1, 1927

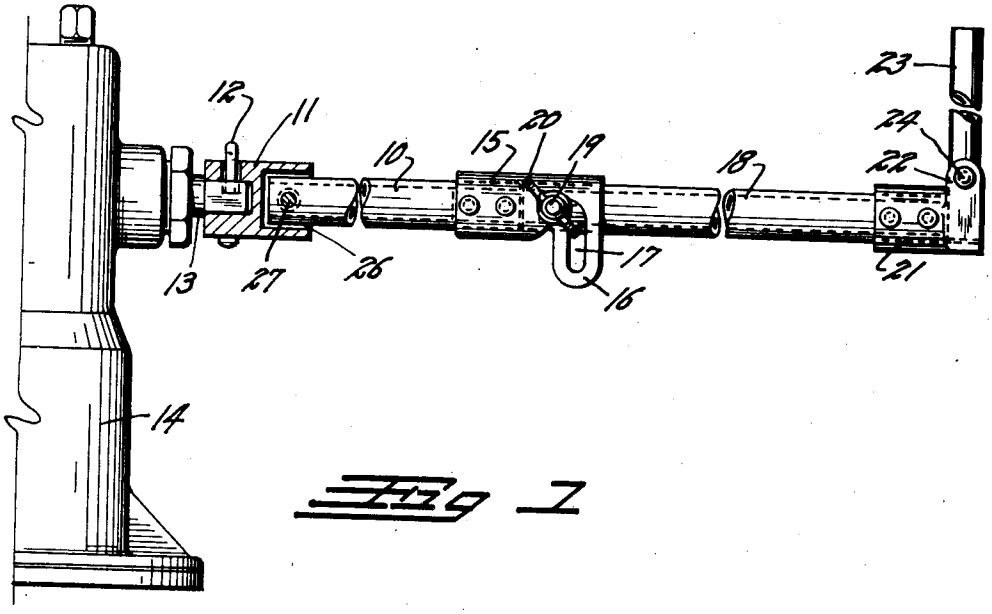


Fig 1

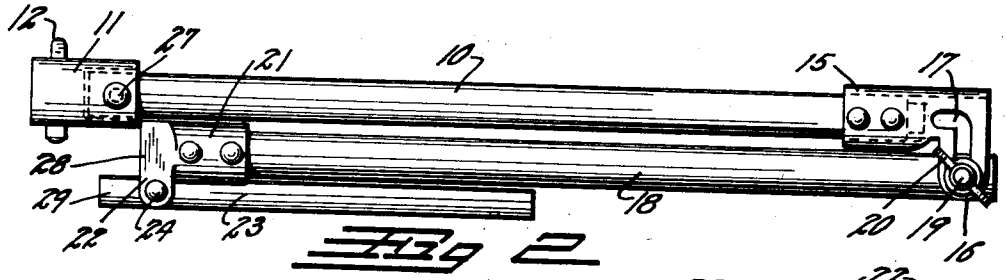


Fig 2

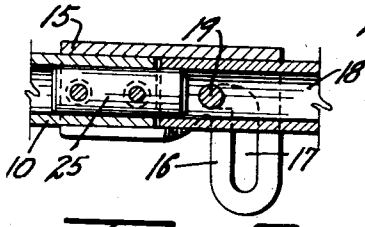


Fig 6

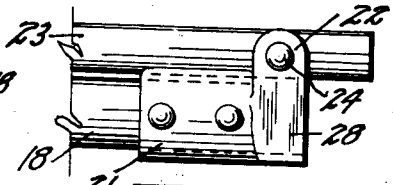


Fig 3

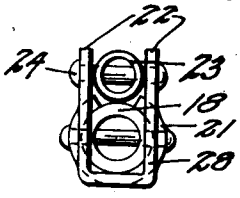


Fig 4

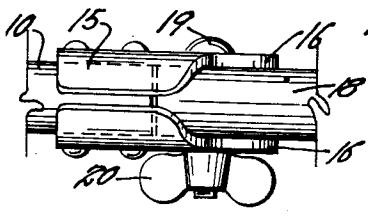


Fig 7

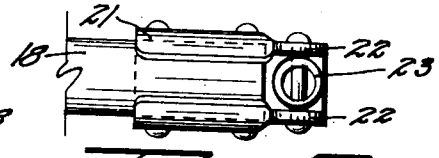


Fig 5

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Patented Aug. 13, 1929. 1,724,694

UNITED STATES PATENT OFFICE.

CLARENCE M. CHAMBERLAIN, OF DENVER, COLORADO.

HINGE JOINT FOR CONNECTING LONGITUDINAL MEMBERS.

Application filed July 1, 1927. Serial No. 202,770.

This invention relates to hinged joints for allowing a bar or series of bars to be either folded upon each other, or extended in alignment, and, while it is particularly applicable for use in the extension shafts and handles of hydraulic jacks, it will be found useful in any other application in which it is desired to collapse or fold a longitudinal member. The invention will be described herein as applied to a jack handle, it being understood that its application is not limited to this use.

The principal object of this invention is to provide hinge means for folding a longitudinal member which will rigidly maintain the member in either the extended or folded position.

Another object of the invention is to provide a longitudinal member, such as a jack handle, with a crank or operating member which will be hinged therein and so arranged that when in the operating position it will be maintained rigidly in place.

A further object is to provide a jack handle, without loose parts, which may be easily folded to occupy a minimum of space and quickly extended for use.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a side elevation of my invention as applied to the handle and extension shaft of a hydraulic jack.

Fig. 2 is a side elevation of the jack handle of Fig. 1 in the folded position.

Figs. 3, 4 and 5 are side, end, and top views, respectively, of the end hinge of the handle.

Fig. 6 is a detail longitudinal section through the middle hinge of the handle.

Fig. 7 is a bottom view of the middle hinge looking upwardly on Fig. 6.

As applied to a jack handle, the invention comprises, a first longitudinal member 10, preferably of tubing. The member 10 carries at its one extremity a socket 11, provided with any of the usual means, such as indicated at 12, for attaching it to the shaft 13 of a hydraulic jack, indicated at 14. The other extremity of the member 10 carries a sleeve 15 riveted or otherwise secured thereon. The sleeve 15 partially surrounds the extremity of the member 10, and is provided with two parallel projecting ears 16. In each of the ears 16 an L-shaped slot 17 is formed, which, for a portion of its length, extends along the axis of the member 10, and, for another portion, extends at right angles thereto.

A second longitudinal member 18, also preferably of tubing, is arranged to fit within the open extremity of the sleeve 15 and carries a bolt 19 which passes through the two slots 17. When the longitudinal members are in alignment, as shown in Fig. 1, the extremity of the member 18 fits within the sleeve 15 and the bolt 19 rides in the extremity of the axial portion of the slot 17. The two members may be locked in the extended position by means of a wing nut 20 so as to maintain them rigidly in alignment.

When it is desired to fold the member 18 upon the member 10, the wing nut is loosened and the member 18 drawn away from the member 10, causing the bolt to ride to the turn in the L-shaped slots 17, and the member 18 to leave the enclosure of the sleeve 15. The member 18 may then be swung between the two ears 16, the bolt traveling the remaining distance in the right angle portion of the slot 17, to the position of Fig. 2, in which position the two members may be rigidly locked by tightening the wing nut 20.

The other extremity of the member 18 carries a hinge member 21 fixed thereon. The hinge member 21 partially surrounds the member 18, as shown in Fig. 7, its open extremity being squared as shown at 28, Fig. 4. Two sides of the squared portion are extended upwardly, forming oppositely positioned ears 22, in which a handle member 23 is pivoted by means of a pivot pin 24. The handle member is pivoted so as to leave a free extremity 29 to pass into the squared portion 28. In the operating position, the handle member 23 extends at right angles to the member 18, it being rigidly maintained in this position by the enclosing sides of the

squared portion of the hinge member 21. In the folded position, the handle 23 lies along the member 18, as shown in Fig. 2.

In a jack handle, it is necessary that the handle member 23 transmit torsional movement to the member 18. A simple pivot for this purpose would not stand the strain and wear necessary to twist the member 18. It is desired to call attention to the fact, however, that in this invention, when the handle member is in the extended position, its extremity is firmly clamped between the two sides of the hinge member 21, which acts as a socket to receive the twisting motion of the handle without strain upon the pivot pin 24.

In the usual construction the sleeve 15 is sufficient to give the required longitudinal rigidity to the members 10 and 18. However, should additional rigidity be required, a cylindrical plug 25 (see Fig. 6) may be secured so as to project beyond the extremity of the member 10 and so as to pass into the extremity of the member 18 when the members are in alignment. This plug furnishes support for the interior of the member 18 to co-operate with the support furnished the exterior by the enclosing sleeve 15.

In an extension jack handle, it is desirable that the socket 11 have some freedom of movement on the member 10 to accommodate any inequalities in the placing of the jack, to allow the handle to be raised to a more convenient operating position, and to prevent the liability of the handle or jack shaft 13 being bent or broken by an accidental upsetting of the jack. I provide for this by forming an enlarged depression 26 in the socket 11 to receive the extremity of the member 10 which is pivoted thereon on a pin 27. This enlarged depression allows a semi-universal movement of the member 10 with reference to the socket.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claim, without departing from the spirit of the invention.

Having thus described the invention, what I claim and desire to secure by Letters Patent is:—

A hinge joint for connecting a first longitudinal member to a second longitudinal member comprising: two longitudinal members, ears secured to and projecting from the first longitudinal member, each ear having an L-shaped slot extending longitudinally of and at right angles to said first member; a projection on said second member adapted to ride in said slot and a plug projecting from the extremity of said first member, said second member being provided with an opening for the reception of said plug when said members are in the extended position.

In testimony whereof, I affix my signature.

CLARENCE M. CHAMBERLAIN.