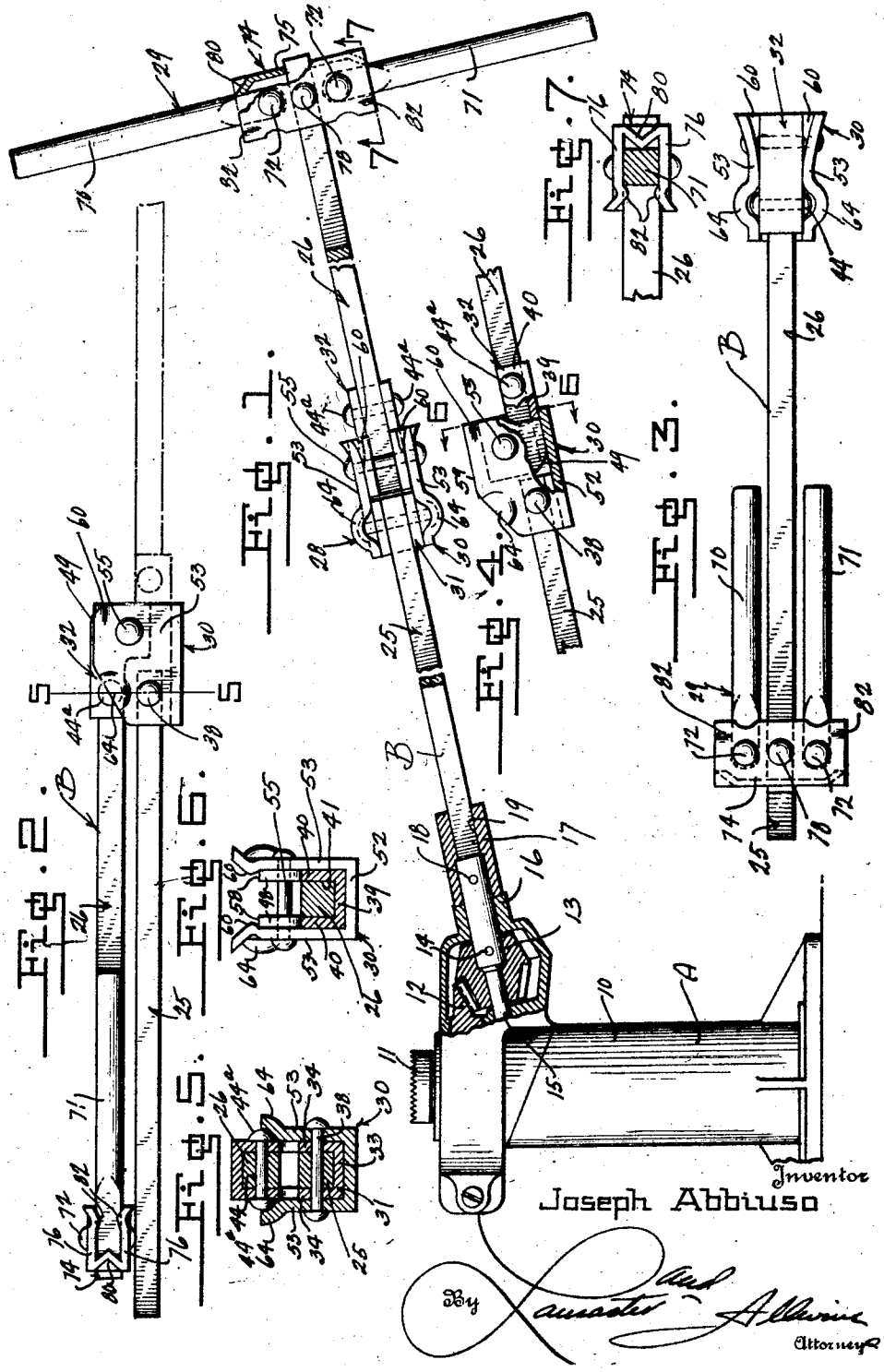
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J. ABBIUSO

AUTOMOBILE JACK HANDLE

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JOSEPH ABBIUSO, OF MILFORD, MASSACHUSETTS.

AUTOMOBILE JACK HANDLE.

Application filed March 23, 1925. Serial No. 17,829.

To all whom it may concern:

Be it known that I, JOSEPH ABBIUSO, a subject of the King of Italy, residing at Milford, county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in an Automobile Jack Handle, of which the following is a specification.

This invention relates to improvements in automobile jack handles.

The primary object of this invention is the provision of an extensible handle construction adapted for use with vehicle jacks, embodying a novel construction by which a relatively long jack handle may be provided in sections which may be compactly collapsed.

A further and important object of this invention is the provision of an extensible handle construction for automobile jacks, of a type particularly well adapted to be used in connection with my improved vehicle jack set forth in my copending application, Serial No. 17,828, filed March 23, 1925

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawing, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevation, partly in section, showing the improved construction of the extensible handle as used in connection with an automobile jack.

Figure 2 is a side elevation showing the improved automobile jack extension handle in a collapsed position.

Figure 3 is a view illustrating the collapsed position of the extension handle; this view being taken at right angles to the view illustrated in Figure 2.

Figure 4 is a fragmentary view showing details at a hinge joint in the improved handle, with the sections thereof extended.

Figures 5, 6, and 7 are cross sectional views taken substantially on their respective lines in Figures 2, 4 and 1 of the drawings.

In the drawing, wherein for the purpose of illustration is shown only a preferred embodiment of the improved handle structure, the letter A may generally designate a jack structure of any approved character, with which the improved extension handle B may be used to operate the same.

The jack A in the preferred instance is of the construction set forth in my co-pending application above referred to, and includes the housing 10 within which the elevating screw 11 is positioned. The operating mechanism for the jack screw structure 11 comprises an operating gear 12, with which a pinion 13 meshes. The pinion 13 is rotatably positioned within the housing 10 upon a pinion shaft 14, which at its inner end has a step bearing 15 in the housing 10, and at its outer end has a bearing in the passageway of a sleeve portion 16 of the housing 10. The pinion shaft at its outer end projects from the sleeve 16, and has a socket sleeve 17 keyed thereto as by a pin 18; the socket sleeve 17 providing an outwardly facing and upwardly inclining polygonal opening 19 therein adapted to receive an end of the extension handle B, as is illustrated in Figure 1 of the drawing.

Referring to the construction of the improved extension handle B, the same preferably comprises a pair of relatively long bar sections 25 and 26, which are preferably of the same size, and square in cross section from end to end. These sections 25 and 26 may be distinguished from each other by respectively calling the same inner and outer sections, and they are pivotally connected for extension or collapsing by means of a novel strong structure 28. On the outer end of the outer section 25 it is preferred to collapsibly position a novel type of hand engaging structure 29 to be subsequently described.

Referring to the joint structure 28, the same preferably comprises a substantially U-shaped spring steel punching or connecting piece 30, and steel punchings 31 and 32 connected respectively with the handle extension sections 25 and 26.

The section 25 at its outer end is preferably provided with the shim or punching 31, which as is well illustrated in Figure 5 of the drawing comprises a U-shaped body which includes a lower wall 33 and side walls 34 in right angled relation to the wall 33, and in parallel relation to each other. The outer end of the section 25 snugly fits within the pocket of this shim 31, so that

the upper edges of the walls 34 lie flush with the adjacent surface or side of the handle section 25, and preferably so that the forward end edge of the shim 31 lies flush with the outer end edge of the section 25, as is illustrated in Figure 1. This punching 31 is fixedly connected in the position mentioned upon the handle section 25 by means of a strong rivet or pin 38, which transversely extends through the section 25 and through the side walls 34, and also through the side walls of the steel spring punching or connecting piece 30 to be subsequently described.

At the inner end of the handle section 26 is rigidly positioned the steel punching hinge piece 32, which is of somewhat novel formation, being U-shaped in cross section, and of L-shaped outline, as to length. It comprises the bottom wall 39, as is illustrated in Figure 6, with the right angled spaced parallel side walls 40 connected therewith and providing the pocket 41 therein into which the inner end of the handle section 26 is positioned and affixed therein by means of a transverse rivet or pin 44 connected through the section 26 and the side walls 40. At the forward end the side walls 40 of the piece 32 are upwardly extended from the adjacent edges of the rear portions of the side walls 40, these upwardly extending portions 48 of the side walls 40 being spaced and in parallel relation, as is illustrated in Figure 6 of the drawing. The inner end of the bottom wall 39 is arcuated, as at 49, to permit the pivotal action of the piece 32 within the connecting piece 30.

The section connecting piece 30 is preferably a spring steel punching, being very strong, and of U-shaped cross section, comprising the bottom wall 52, with the upstanding spaced parallel walls 53 in right angled relation therewith. The pocket provided by this connecting piece 30 receives the shim 31 and the outer end of the section 25 therein, and is connected thereto by means of the rivet or pin 38 above mentioned. In the rear portion of the connecting piece 30 the outer section 26 is pivotally connected by means of a pin or rivet 55, which extends thru the side walls 53 of the piece 30, and through the upwardly extending portions 48 of the side walls of the piece 32. This pin 55 acts as a pivot for the section 26 upon the connecting piece 30, and the said pivot pin 55 provides a pivot axis which is positioned laterally of the alignment of the sections 25 and 26, when they are in extended position. The side walls 53 are relatively deep, and brace the pieces 31 and 32 throughout their heights. The top edges 58 of the portions 48 are below the top edges 59 of the side walls 53 of the connecting piece 30, and said side walls 53 above the edges 58 are inwardly crimped, to provide catch ears or portions 60 which overlie the edges 58 at the outer end of the piece 30, with a spring clamping action to maintain the sections 25 and 26 in alignment. In this position the bottom wall 39 is of course placed in engagement with the bottom wall 52, so that the handle sections 25 and 26 are held in alignment against moving in any direction.

The sections 25 and 26 may be collapsed into parallel relation, and to effect this it is merely necessary to overcome the spring action of the side walls 53, flexing the same by forcing the catch portions or ears 60 apart, so that the handle sections may be moved into collapsed position. This flexing of the side walls 53 of the connecting piece 30 is illustrated in Figure 3 of the drawing, and binds the ears or catch portions 60 against the side walls 40 of the outer section attached piece 32, with sufficient frictional engagement to hold the handle sections in a collapsed condition. As the attaching pin 44 is provided with the heads 44^a in outwardly bulging relation at the sides thereof, it is preferred that the upwardly extending side walls 53 of the connecting piece 30 above the rivet 38 be provided with lateral bulge pockets 64 for the accommodation of said heads 44^a, and as is illustrated in Figure 5 of the drawing. This permits a compact parallel collapsing of the handle sections.

Referring to the hand engaging structure 29, the same preferably comprises a pair of oppositely disposed hand bars 70 and 71, pivoted as by pins or rivets 72 upon a spring steel punching piece 74. The U-shaped connecting piece 74 preferably comprises a bottom wall 75, and the spaced parallel side walls 76. The outermost end of the outer section 26 is rigidly fastened in the steel punching piece 74 between the side walls 76, by means of a rivet or pin 78; the handle section 26 entering the pocket between the walls 76 in a right angled relation to the bottom wall 75, and extends through a square opening in said wall 75 to rigidly position the length of the steel punching piece 74 crosswise at the end of the handle section 26. The hand bars 70 and 71 are pivoted at opposite sides of the handle section 26, and it is preferred that the ends of the bottom wall 75 be inwardly struck, at 80, to brace the hand bars 70 and 71 thereagainst when they are in their extended aligning relation for hand engaging purposes. At each side of the handle section 26 the side walls 76 are inwardly crimped to provide the catch portions or ears 82, similar to the catch portions 60 above mentioned, and for the purpose of springing into position over the adjacent outer surfaces of the hand bars 70 and 71, when they are extended, and to hold them

in extended position braced against the portions 80, as is illustrated in Figures 1 and 7 of the drawing. To collapse the hand bars 70 and 71 it is merely necessary to move them toward the handle section 26, this flexing the side walls 76 until the hand bars are past the inwardly extending catch portions 82, so that the side walls may return to their normal positions when the hand bars 70 and 71 are collapsed against the handle section 26, and again cooperating in maintaining the hand bars in such collapsed position, and as is illustrated in Figures 2 and 3 of the drawings.

It is to be particularly noted that in operation the inner end of the inner section 25 is slipped into the square socket opening 19, and in such position the handle section 26 and collapsed hand bars 70 and 71 may be collapsed upon the section 25, and in such collapsed position the section 26 and the connected hand bars 70 and 71 will not abut the socket 17, since the inserting end of the section 25 projects beyond the end wall 75 of the hand bar connecting piece 74, as is illustrated in Figures 2 and 3 of the drawing. It is to be particularly noted that the hand bars collapse in a plane with the section 26, which is at right angles to the plane defined by the collapsed handle sections 25 and 26, thus providing a very compact collapsing arrangement.

From the foregoing description of this invention it is apparent that a novel type of extension handle has been provided, which admirably serves the purpose of providing a jack handle, in that the same when extended is very strong, and yet may be collapsed into a very compact position, which is very essential in connection with an automobile jack where the jack handle has to be stored within limited space.

Various changes in the shape, size, and arrangement of parts may be made to the form of the invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a handle structure of the class described the combination of a pair of hingedly connected handle sections, means for maintaining said handle sections in collapsed or extended relation, hand engaging bars, and means collapsibly connecting said hand engaging bars at the free end of one of said handle sections so as to be moved in a plane at right angles to the plane of movement of said handle sections.

2. A collapsible handle structure for vehicle jacks comprising a pair of handle sections, means hingedly connecting said sections for movement in a defined plane into a secured collapsed or extended position, hand engaging bars, and means hingedly connecting said hand engaging bars to the outer end of one of said handle sections for movement in a plane at right angles to the plane of movement of the handle sections into a secured extended or collapsed relation with respect to said handle section.

3. In a vehicle jack handle structure the combination of a pair of sections, a connecting piece, and means pivotally connecting the said sections to said piece on a fixed pivot axis laterally offset with respect to the axis of said handle when the sections are in true alignment and whereby said sections may be collapsed into parallel relation.

4. In a handle structure of the class described the combination of a pair of handle sections, a metal punch piece substantially U-shaped in cross section, means rigidly connecting one of said handle sections in an end of said metal punch piece, and means pivotally connecting the other handle section in the opposite end of said metal punch piece on a fixed pivot axis which is offset with respect to the alignment of said handle sections when extended.

5. In a handle structure of the class described the combination of a pair of handle sections, a metal punch piece substantially U-shaped in cross section, means rigidly connecting one of said handle sections in an end of said metal punch piece, and means hingedly connecting the other handle section in the opposite end of said metal punch piece for movement on a pivot axis which is offset with respect to the alignment of said handle sections when extended, said U-shaped metal punch piece including side walls having catch portions thereon adapted to cooperate against the inwardly connected handle sections for the purpose of locking the same in an extended and collapsed position against accidental movement therefrom.

6. In a vehicle jack handle structure the combination of a pair of handle sections, a substantially U-shaped metal connecting piece including a bottom wall and flexible side walls, means fixedly connecting one of said sections in an end of said connecting piece between said side walls, and an L-shaped member fixedly connected to the other handle section and hingedly connected to the side walls of said connecting piece on a pivot axis offset with respect to the alignment of said handle sections when extended.

7. In a vehicle jack handle structure the combination of a pair of handle sections, a substantially U-shaped metal connecting piece including a bottom wall and flexible side walls, means fixedly connecting one of said sections in an end of said connecting piece between said side walls, and an L-shaped member fixedly connected with the other handle section and hingedly connected to the side walls of said connecting piece on a pivot axis offset with respect to the

alignment of said handle sections when extended, said side walls of said connecting piece having inwardly extending catch portions adapted to cooperate against said L-shaped member to lock the hingedly connected handle sections in extended or collapsed relation with respect to each other.

8. In a handle structure for jacks the combination of a handle section, a substantially U-shaped metal connecting piece including a bottom wall and side walls in spaced relation, means connecting the handle in right angled relation between said side walls between the ends of said connecting piece in rigid relation to said connecting piece so that U-shaped portions of said connecting piece extend at opposite sides of said handle sections, hand bars, and means hingedly connecting the hand bars in said oppositely disposed U-shaped portions of said connecting piece for movement into an extended braced position against the bottom wall of said connecting piece, said side walls of the said connecting piece having inwardly facing catch portions adapted to cooperate with said pivotally connected hand bars to lock the same in extended or collapsed relation with respect to each other and to the handle.

9. In a handle structure for jacks the combination of a pair of pivotally connected handle sections, a pair of hand bars, a metal U-shaped connecting piece of pocket shaped formation including a bottom wall and spaced parallel side walls, means connecting one of the handle sections in right angled relation in the pocket of the channel shaped connecting piece, individual pins pivotally connecting said hand bars in the pocket of the connecting piece at opposite sides of the handle section which is connected to the connecting piece, said bottom wall being crimped at the ends thereof against which the hand bars may abut in order to position the hand bars in a limited right angled extension with respect to the handle section of said connecting piece, the side walls of the connecting piece being crimped at the corners thereof for the purpose of retaining said hand bars in parallel relation along the adjacent handle section or extended right angled relation with respect thereto.

JOSEPH ABBIUSO.