March 8, 1949. F. J. HAUSCHILD 2,463,966

CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 1

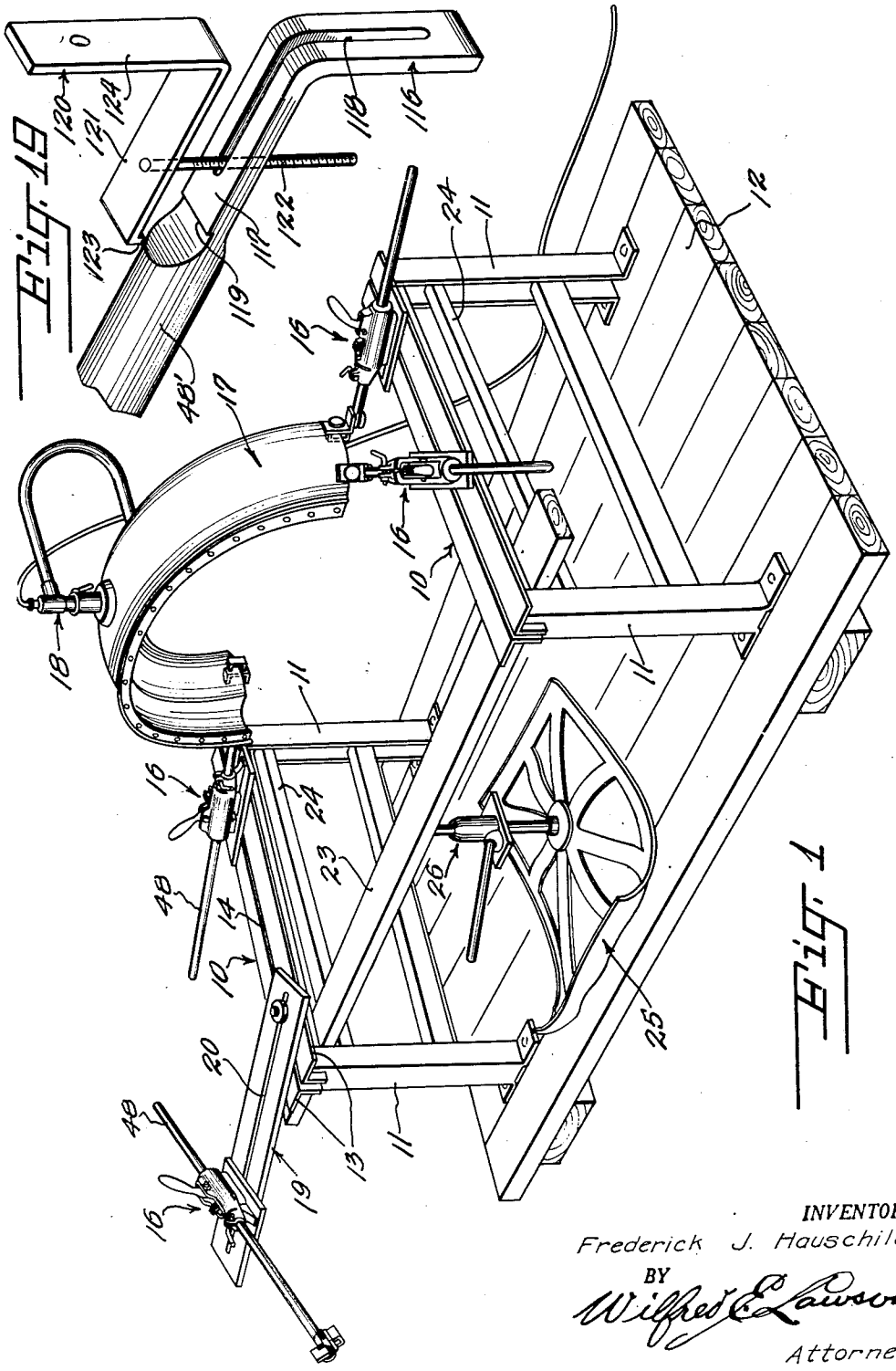


Fig. 1

Fig. 1A

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CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 2

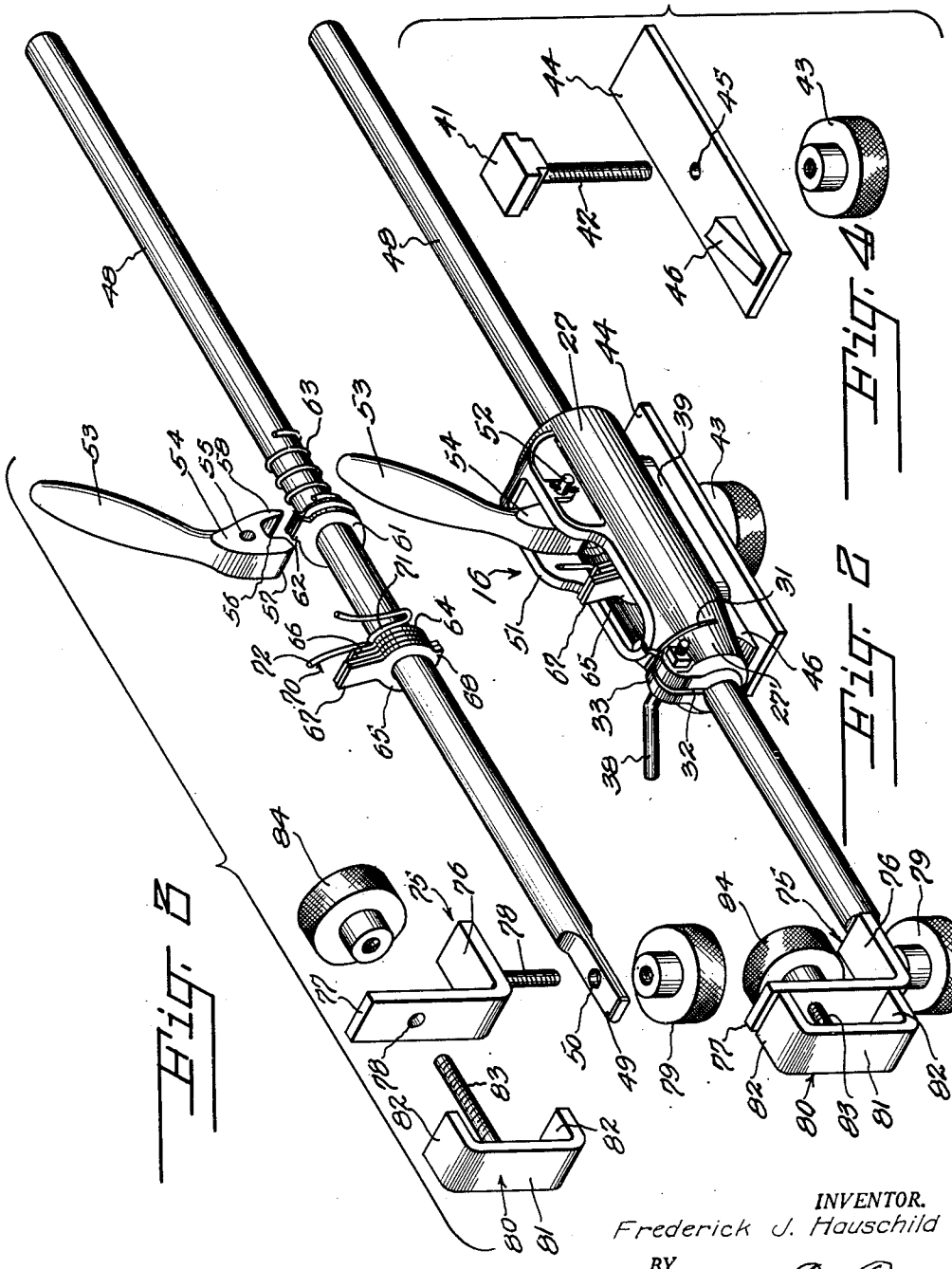


Fig. 4

Fig. 2

Fig. 3

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CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 3

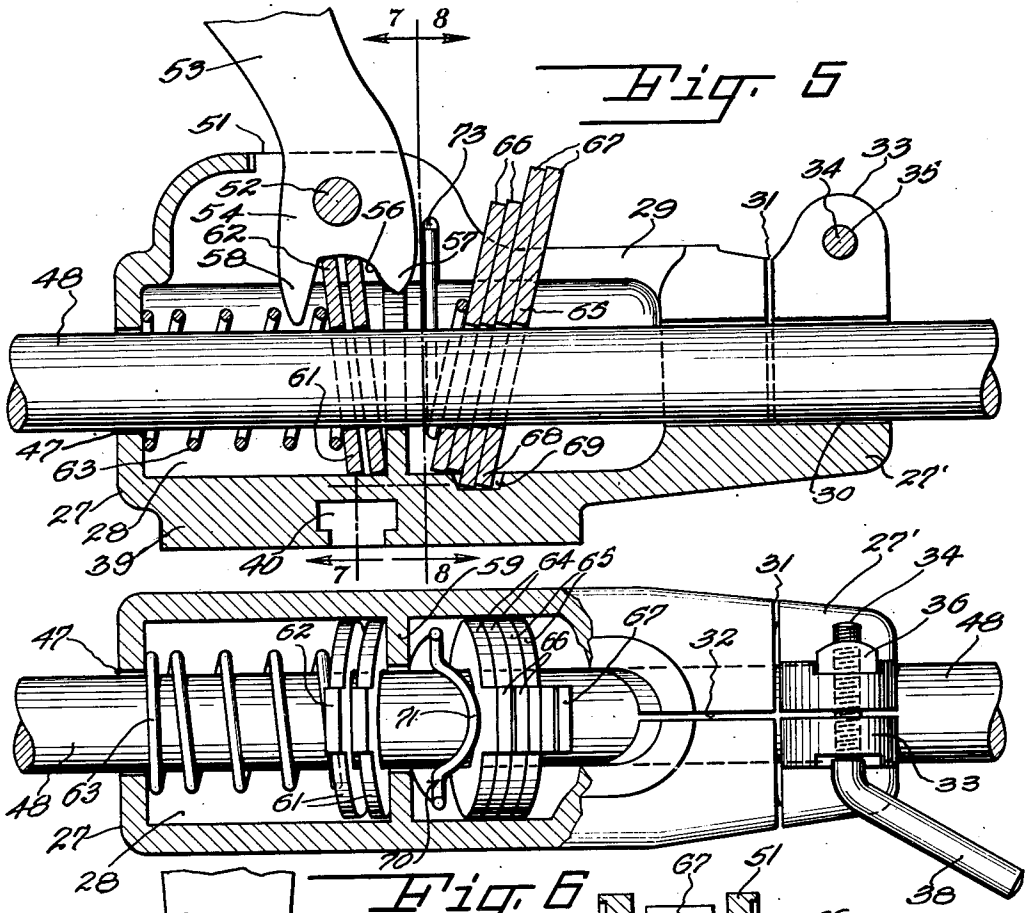


Fig. 6

Fig. 6

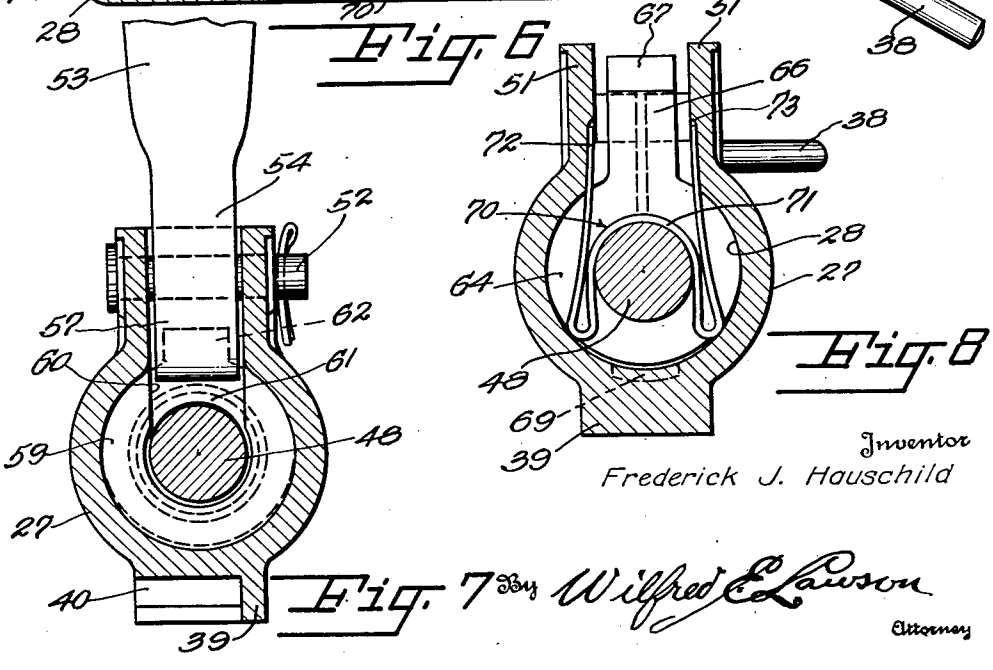


Fig. 7

Fig. 8

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CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 4

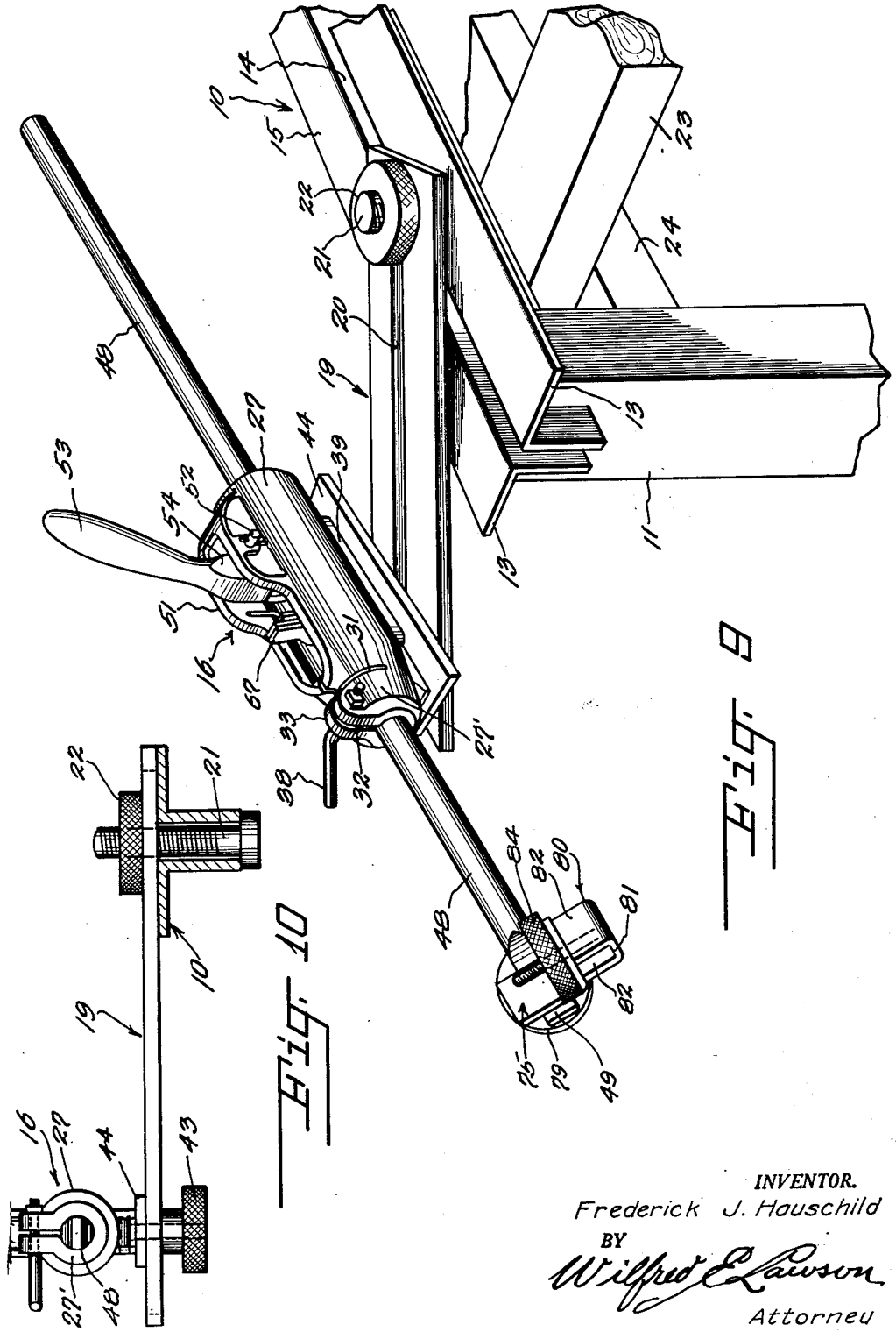


Fig. 9

Fig. 10

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CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 5

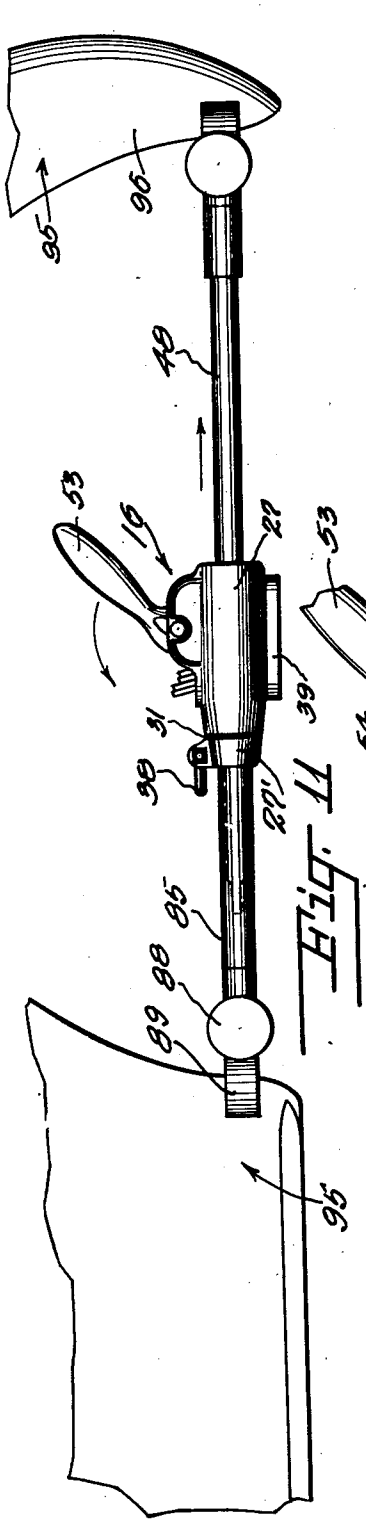


Fig. 11

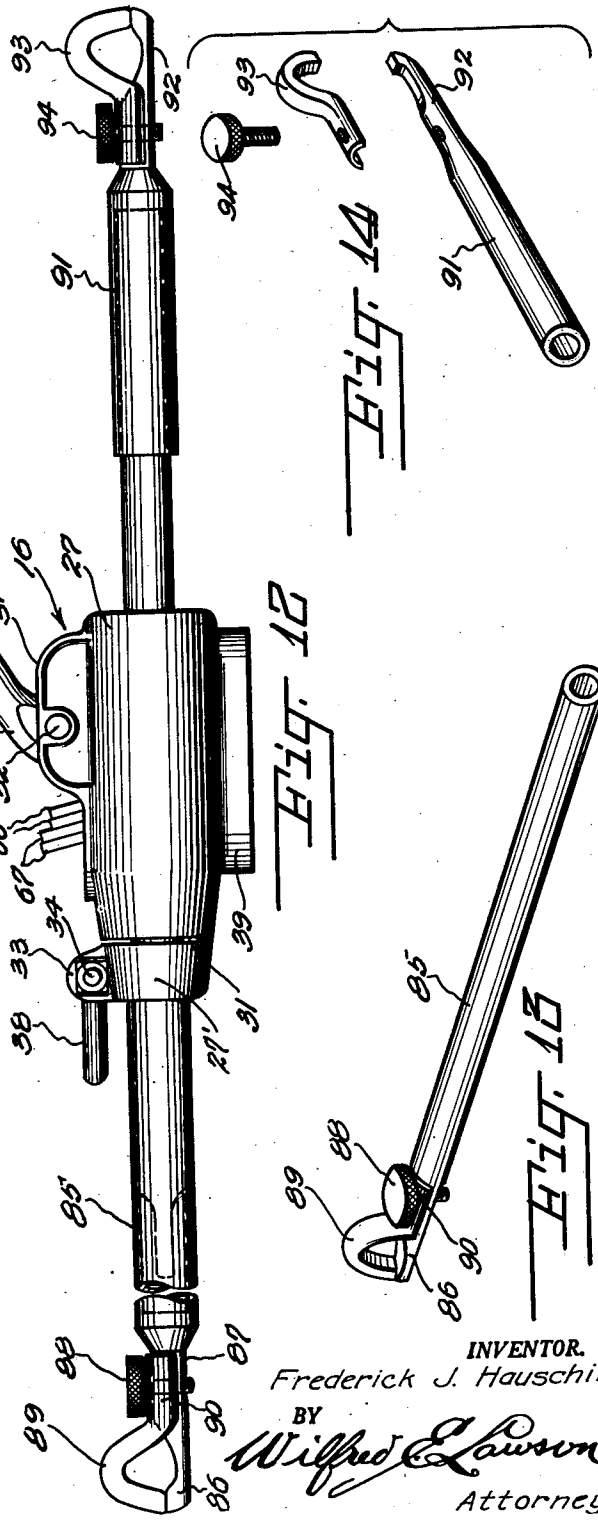


Fig. 12

Fig. 14

Fig. 13

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CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

Filed July 9, 1946 6 Sheets-Sheet 6

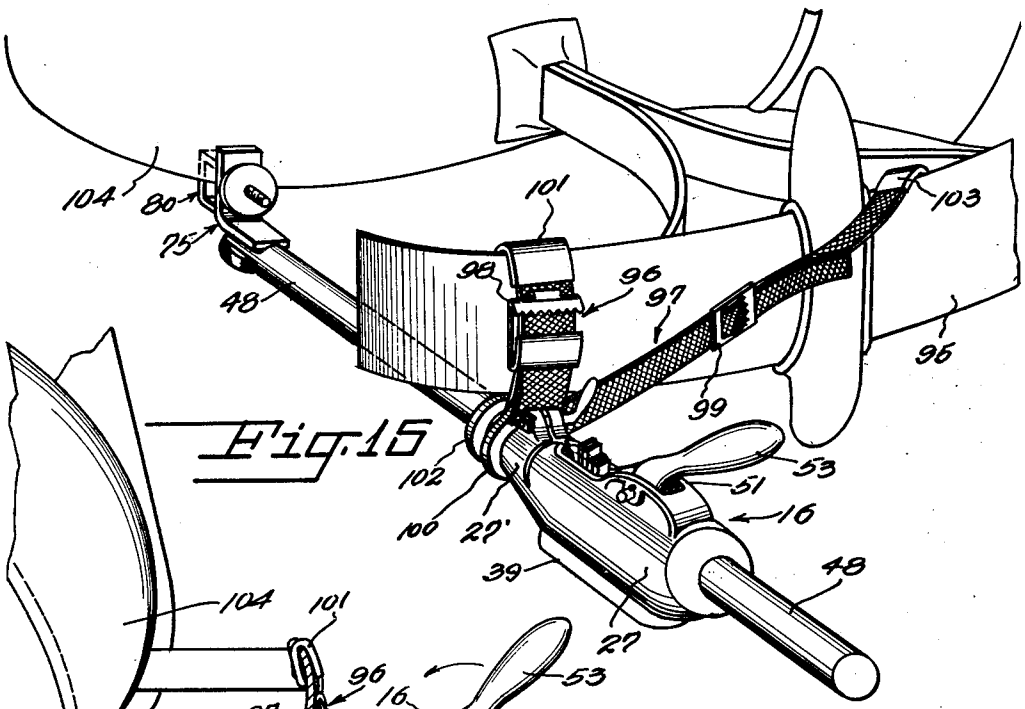


Fig. 15

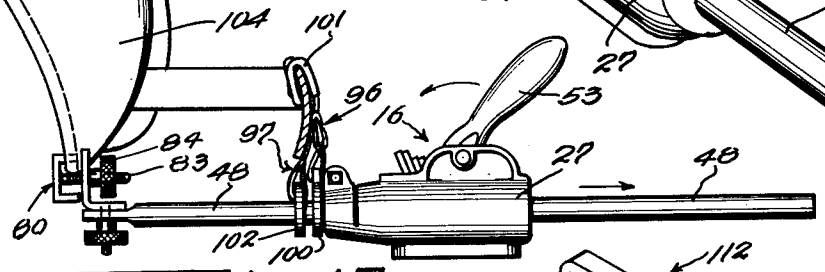


Fig. 16

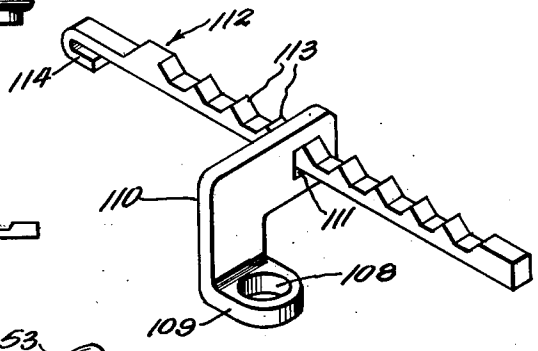


Fig. 18

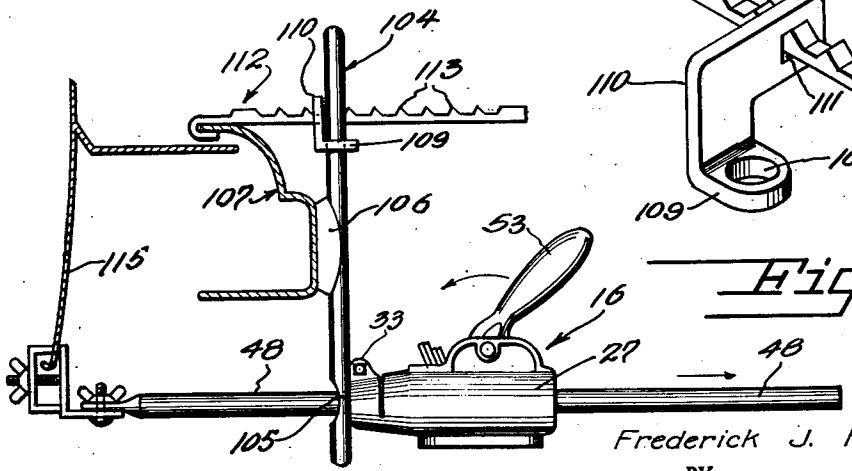


Fig. 17

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2,463,966

UNITED STATES PATENT OFFICE

2,463,966

CLAMP MECHANISM FOR STRAIGHTENING SHEET METAL BODIES

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Application July 9, 1946, Serial No. 682,267

8 Claims. (Cl. 153—32)

1

This invention relates generally to the class of tools and pertains particularly to an improved adjustable clamp for the purpose of holding and straightening sheet metal bodies, more particularly sheet metal parts of motor vehicle bodies.

A principal object of the present invention is to provide a clamping device which is easily and quickly adjusted and is particularly well adapted for use in working upon loose parts for the purpose of straightening, repairing or performing other jobs thereon, more especially parts of a motor vehicle body such, for example, as fenders, door panels, trunk covers and the like.

Another object of the invention is to provide a readily adjusted and easily operated pump type of clamp by means of which parts to be worked upon may be firmly held in position or may have push or pull applied thereto as may be required through the actuation of a single manipulating handle or lever.

A further object of the invention is to provide a tool of the character stated whereby loose parts may be effectively held in various positions and wherein when two or more of the adjustable clamps are employed for holding a part, the reach of such clamp may be increased or decreased to grip the held part at a desired point and the clamps may be manipulated to pull upon the part or compress the same as may be desired.

A further and more specific object of the invention is to provide a novel adjustable pump type clamp embodying a body portion through which is slidably extended an adjustable rod, to an end of which rod a piece of work may be secured, means being provided in the body of the clamp in the form of slip rings or collars and a pivoted lever for effecting the longitudinal adjustment of the rod and for securely locking the rod in adjusted position.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification with the understanding, however, that the invention is not confined to a strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a view in perspective illustrating a method of using the adjustable pump clamp of the present invention in the operation of removing dents from and straightening a fender and also illustrates a method of working upon a door or trunk panel for the purpose of restoring the same to its former or original undented condition.

2

Figure 2 is a view in perspective of an adjustable pump clamp constructed in the accordance with the present invention.

Figure 3 is an exploded view in perspective of a portion of the clamp removed from the body or housing.

Figure 4 is an exploded view in perspective of the base support or mounting for the clamp.

Figure 5 is a central longitudinal section of the body portion of the clamp.

Figure 6 is a view partly in top plan and partly in horizontal section through the body portion of the clamp showing the locking and thrust collars in top plan view.

Figure 7 is a section taken substantially on the line 7—7 of Figure 5.

Figure 8 is a sectional view taken substantially on the line 8—8 of the Figure 5.

Figure 9 is a view in perspective, on an enlarged scale, illustrating the use of an extension swivel track for supporting a clamp upon a frame structure in the manner illustrated in Figure 1.

Figure 10 is a view in elevation of the swivel track and clamp mounted thereon, the swivel track being shown secured to a frame track which in transverse section.

Figure 11 illustrates the use of auxiliary clamps or gripping elements in connection with the adjustable clamp for the purpose of applying separating thrusts to opposite ends of a vehicle fender.

Figure 12 is a view in side elevation and upon an enlarged scale of the structure shown in Figure 11, the gripping member being turned 90 degrees.

Figure 13 is a view in perspective of an extension arm used upon the adjustable rod of the clamp at the head end of the latter.

Figure 14 is an exploded view in perspective of an extension attachment for the rear end of the adjustable rod of the clamp structure.

Figure 15 illustrates a method of using a harness in connection with the adjustable clamp for connecting the clamp between a motor vehicle bumper and fender for the purpose of pulling or stretching the fender.

Figure 16 is a view in side elevation of the structure shown in perspective in Figure 15, a portion of the bumper being in section.

Figure 17 is a view in side elevation of the ad-

justable clamp and a fulcrum employed for coupling the clamp rod with a motor vehicle bumper.

Figure 18 is a view in perspective of a part of the fulcrum shown in Figure 17.

Figure 19 is a view in perspective of a modified form of the pump clamp bar.

Referring now more particularly to the drawings Figure 1 illustrates a structure by means of which one method may be carried out of using the hereinafter more specifically described clamp in connection with the operation of straightening a motor vehicle fender.

In carrying out this particular method there are provided the two spaced, parallel slotted track rails, each of which is generally designated 10 and which are supported upon suitable standards 11, mounted on a base or platform 12 or in any other suitable manner. The tracks 10 or track rails are each made up of two angle bars 13 which are supported upon the standards 11 so that two angle portions are disposed vertically in spaced relation to form the guide slot 14 and the remaining two angles of the two bars making up the rail, are oppositely directed to provide a relatively wide flat surface, or a pair of flat surfaces each of which is designated 15.

Upon the flat top surfaces 15 of the track rail bars are mounted a desired number of the pump clamps, each of which is generally designated 16 and these are adjustably secured upon the rail in the manner hereinafter described, so as to be most conveniently positioned for supporting between them, that is between the clamps of one rail and those of the other rail, a unit to be worked upon, such, for example, as the motor vehicle fender unit 17 shown in Figure 1.

The unit 17 is supported between the clamps of the two track rails 10 and the necessary work is performed thereon as, for example, by the use of a pneumatic hammer machine, generally designated 18 and of the type illustrated in my prior Patents Number 2,148,619 and 2,148,943 both issued February 28, 1939. In the use of such tool for the purpose of removing dents and otherwise straightening the fender, the clamps may be adjusted as necessary, as the work progresses, to pull apart the ends of the fender so that in addition to holding the fender in proper position to be worked upon by the pneumatic hammer 18, the clamps operate to pull the fender back into the desired shape thereby performing a double function.

In the performance of operations where it might be necessary that one of the pump clamps 16 be supported in some position other than upon one of the track rails 10, there is provided an extension swivel track which is generally designated 19 and which comprises a plate of suitable length having a longitudinal slot 20 therein. One end of this plate is disposed across the track rail 10 in the manner shown in Figures 1, 9 and 10 and is adjustably secured in position by means of a clamping bolt 21, the shank of which is disposed vertically in the slot 14 and extends through the slot 20 of the extension track. The head of the bolt 21 engages the lower edges of the vertical angle portions of the two angle bars making up the track rail while a large knurled nut 22 is threaded upon the upper end of the bolt shank and brought to bear upon the top of the extension track 20 to firmly secure the latter in the desired adjusted position.

The pump clamp 16 is then supported upon the top of the extension track over the slot 20 and adjustably secured on the track, in the manner hereinafter described, through the medium of a suitable clamping bolt engaging through the track slot 20.

In addition to the foregoing, the structure comprising the slotted track rails 10, the standards 11 and platform 12, may be employed in carrying out other repair or straightening operations. For example, there may be placed between the slotted track rails 10, a plank or bar 23 having its ends disposed beneath the slotted track rails and resting upon supporting bars 24 each of which is connected between two adjacent standards or posts 11 in the manner shown. The body to be straightened, such, for example, as a door panel or trunk cover, generally designated 25, is then placed upon the platform 22 and a jack unit 26 or other suitable thrust applying tool is interposed between the work 25 and the plank 23 and operated to impose downward pressure on the work so as to straighten or flatten out the dents therein.

The pump clamp 16 is illustrated in detail in Figures 2 to 8 inclusive. As will be seen upon reference to these figures the clamp comprises a relatively long body 27 in which is formed a longitudinally extending chamber 28 which opens upwardly through the top of the body as shown, the opening being designated 29.

The body 27 may be of any desired cross sectional form but is here shown as being substantially cylindrical and at one end, which may be defined as the forward or head end, the body is of reduced diameter and is provided with the axial passage 30. The head end of the body which is designated 27', is of substantial wall thickness as shown particularly in Figure 5 and this head end is cut transversely from the top of the body downwardly to approximately the bottom part of the passage 30, forming the transverse slot 31. In addition the body is provided with the vertical longitudinally directed slot 32 which opens through the forward end of the head and into the forward end of the chamber 28, as also shown in Figure 5, and the portions of the edge bordering the longitudinal slot 32 have extending upwardly therefrom the spaced parallel ears 33. Thus the forward end of the body, or the head 27', is formed to provide a split collar and the ears 33 are adapted to be drawn together or sprung apart for the purpose of decreasing or increasing the diameter of the forward end of the passage 30 by the provision of the lock screw 34 which passes freely through the transverse apertures 35 in the ears 33 and receives upon one end of the threaded nut 36 which is maintained against rotation by being positioned in the recess 37 formed in the adjacent side of the adjacent ear. The opposite end of the lock screw 34 is extended into the angularly directed lever 38 by means of which the screw may be turned to draw the ears together or release the same as required.

The under side of the body 27 is of increased thickness to provide the base portion 39 and the bottom face of this base portion is flat so that the body of the clamp may rest firmly upon the surfaces 15 of the slotted track rail or upon the extension track 19 or other supporting bodies. Formed in the base 39 and opening through one side thereof, is a T slot 40. This T slot receives the T head 41 of a clamping screw 42, upon which is threaded the relatively large knurled nut 43 by means of which the tool is firmly secured in mounted position upon the slotted track rail or other structure.

In the use of body 27 mounted upon a slotted track rail or an extension rail as shown in Figure 1, there is provided a base plate 44 having an aperture 45 through which the bolt 42 passes and at one end this base plate 44 carries an abutment lug 46 against which the forward end of the base portion 39 engages. However, when the clamp is used as a coupling means between two ends of a piece of work or in any one of several other different ways, certain of which are hereinafter described, and does not rest directly upon a supporting surface, the base plate 44, bolt 42 and nut 43 are removed.

The rear or back end of the body 27 is provided with an aperture 47 which is of the same diameter as the passage 30 and there is extended longitudinally through the body 27, the relatively long rod 48 which passes through the passage 30 and the aperture 47 and also through the axial center of the chamber 28 which is of circular cross section as shown in Figures 7 and 8. This rod at the forward end, which is the end nearest the head end 27' of the clamp body, is flattened as indicated at 49 and provided with an aperture 50 for the purpose hereinafter described.

Extending through substantially half the length of the opening 29, at the rear or back portion of the body 27, are the upstanding walls 51 which border the opening 29 and form an integral part of the body 27, and these walls are provided with alined transverse openings to receive a pivot pin 52 upon which is pivotally or oscillatably supported the thrust lever 53. This lever has the head portion 54 which is positioned between the walls 51 and is provided with an opening 65 through which the pivot pin 52 passes. The inner or lower end of the lever head 54 is formed to provide a claw 56 having the forward and rear fingers 57 and 58 respectively.

Forwardly of the pivot pin 52 the chamber 28 has the transverse web 59 formed, which has the vertical slot 60 alining with the opening 29, through which the rod 48 passes. Between this web 59 and the rear end of the chamber 28 are located the thrust collars 61, through which the rod 48 passes and which have the lower edges or parts disposed adjacent to the web 59. The top of each collar 61 has the upwardly extending ear 62 which extends into the claw 56 between the fingers 57 and 58.

Surrounding the rod 48 between the back end of the chamber 28 and the thrust collar 61 nearest thereto, is an expansion spring 63 which constantly urges the thrust collars 61 toward the web and also toward a vertical position whereby the rod 48 may have sliding movement through the collars.

Upon the opposite side of the web 59 from the thrust collars 61 are two sets of lock collars 64 and 65. Any number of these locking collars may be employed but there are here shown two of each set. The locking collars 64 which are nearest to the web 59, have only the upwardly extending or top ears 66, while the locking collars 65 have the top and bottom ears 67 and 68 respectively.

The ears 66 and 67 of the locking collars extend upwardly through the opening 29 and are forwardly of the walls 51 so that they may be grasped by the fingers to be oscillated as desired.

The downwardly extending ears 68 of the collars 65 are positioned in a socket 69 formed in the bottom wall of the chamber 28, as shown in Figure 5, so that the forward movement of the locking collars in the chamber is prevented.

As shown in Figure 5, and also in other figures, the rod 48 passes through the locking collars as well as through the thrust collars and the openings of the collars are of sufficient diameter to permit the collars to have slight rocking movement in the chamber with respect to the rod 48 so that the sharp edges of the openings of the collars may be caused to bite into the rod 48 as desired to hold the rod against movement in one direction as in the case of the locking collars 64 and 65 or to effect the thrust or axial movement of the rod in the opposite direction as in the case of the thrust collars 61 when acted upon by the claw of the lever 53 in the manner hereinafter described.

Interposed between the web 69 and a locking collar 64 is a tilting spring 70 which, as shown in Figures 3, 5, 6 and 8, comprises a U shaped portion 71 which straddles the rod 48 and which has the reversely bent upwardly extending legs 72 which are fixed in opposite sides of the walls 51 in slots or recesses 73, as shown in Figures 5 and 8. The U shaped portion 71 of this tilting spring is inclined forwardly and therefore constantly tends to oscillate or tilt the locking collars 64 and 65, pivoting the collars 65 upon the ears 68 which are engaged in the socket 69. This causes the edges of the openings of the collars to constantly engage the rod 48 at the top and bottom, thereby preventing the free sliding movement of the rod 48 forwardly through the body 27 by reason of the biting of such edges into the bottom of the rod. However forward sliding movement may be effected by grasping the ears 66 and 67 of the locking collars and oscillating such collars rearwardly against the tension of the spring loop 71 whereby to bring the axis lines of the openings of the locking collars toward a parallel position with respect to the rod 48.

As previously stated the spring 63 tends to straigten up the thrust collars 61 so that the rod 48 may be freely shifted rearwardly through the body 27. This shifting of the rod, backward or rearwardly through the body is effected through the pumping action of the lever 53. As will be readily apparent upon reference to Figure 5, when the lever 53 is swung forwardly on its pivot 52 the finger 58 will be brought to bear upon the adjacent ear of a thrust collar 61, tending to swing or oscillate the collar to a slanting position against the action of the spring 63 and thus causing the edge of the collar opening to bite into the rod 48. Continued swinging of the lever 53 forwardly will thus cause the bar to be shifted toward the rear and during this action the spring 63 will be compressed. The locking collars 64 and 65 will not interfere with this operation as the frictional engagement of the rod with the edges of the openings of the locking collars will tend to straighten up these collars against the action of the tilting spring so that the rod may move without restriction. After the lever has been released the spring 63 will force the thrust collars 61 forwardly, or return them to their position adjacent to the web 59, thereby reversing the oscillation of the lever 53. However, the rod 48 cannot move back because of the fact that the tilting spring will then immediately tilt or oscillate the locking collars 64 and 65 thereby bringing the edges of the openings of these collars into tight engagement with the bottom part of the rod and causing such edges to bite into the rod to hold it against reverse movement.

Figures 9 and 10 illustrate specifically the manner of mounting the pump clamp upon the exten-

sion swivel track, whereby the clamp may be not only moved from one side of the slotted track structure as shown in Figure 1, but may be swung around in a relatively large circle and also turned around the center of the securing bolt 42, which is connected with the base 39 by means of the key slot 40, so as to put the clamp in any desired position for gripping a piece of work. When used in this manner, the base plate 44 is disposed upon the top of the extension track as shown and the nut 43, when tightened up, will engage the under side of the extension track 19 and thus lock the clamp in position.

The forward end of the rod 48 is coupled with the work by a jaw unit which is pivotally mounted upon the flattened portion 49 of the rod and which is shown most clearly in detail in Figures 2 and 3. This pivotal jaw unit comprises an angle member 75 which comprises a base portion 76 and the right angularly disposed jaw portion 77 which at a point substantially midway between its ends is provided with an opening 78. The base portion of the angle member 75 has fixed to the underside thereof the threaded stud 78 which is adapted to pass through the opening 50 in the forward end of the rod 48 to receive the hand nut 79 whereby to fix the angle member in a desired adjusted position.

Associated with the angle member 75 is a substantially U-shaped member 80, which comprises a central web portion 81 and the right angularly directed parallel end portions 82 which form jaw lips. Fixed to the center part of web 81 between the lips 82 is the threaded stud 83 which is parallel with the lips 82 and extends a substantial distance beyond the lips as shown in Figure 3 and is adapted to pass through the opening 78 in the jaw portion 77 of the angle member 75 to receive the hand nut 84. The jaw portion 77 is of materially greater length than the member 80 and consequently when the member 80 is drawn up toward the jaw portion 77 by the engagement of the hand nut 84 with the threaded stud 83, the end edges of the jaw lips 82 will come into engagement with the adjacent face of the jaw portion 77 and a piece of work interposed between such jaw portion and a lip 82 will be firmly gripped. An illustration of the manner in which this jaw unit grips a body of work, is given in Figures 1 and 15 to 17 inclusive.

In Figures 11 to 14 inclusive there are shown attachments for the clamp by means of which separating or spreading force may be applied to a piece of work where it is necessary to force two parts of the work away from one another.

As previously described, in the use of the clamp, the oscillation of the lever 53 will cause the rod 48 to be moved rearwardly through the head end 27' of the body 27. In the use of the attachments shown in Figures 11 to 14 the jaw or gripping unit shown in Figure 2, is removed from the flattened end portion 49 and there is slipped onto the forward end of the rod 48, the tubular brace arm 85, the rear end of which brace arm is placed against the forward end of the head 27' of the clamp body. The other or forward end of this arm 85 is reduced and shaped to form a rigid stationary jaw 86 and the rear end or shank portion 87 of this jaw is apertured and threaded to receive the shank of a securing screw 88.

Cooperating with the rigid jaw 86 is a bent movable jaw 89, the end of which is adapted to oppose the outer end of the jaw 86 as shown particularly in Figure 11 and the rear or shank portion 90 of this bent movable jaw is of semicylindrical

form and adapted to position over the shank portion 87 and is also apertured to receive the threaded shank of the securing screw 88. Thus the two jaws 86 and 89 may be brought together into gripping relation.

Associated with the rear of the rod 48 is a relatively short jaw tube 91 into which the end of the rod 48 is inserted and the outer end of this tube 91 is provided with the fixed and shiftable jaws 92 and 93 respectively which, as will be readily seen, are of the same character as the jaws 86 and 89 and are coupled together, like the first mentioned jaws, by a screw which is here designated 94.

In Figure 11 the tool is shown mounted between the ends of a motor vehicle fender which is generally designated 95, the forward end of the fender being designated 96. In the operation of spreading or opening the fender after the same has been deformed the jaw, at the end of the brace arm 85, is clamped onto the edge of the rear portion of the fender while the jaw at the end of the tube 91 is clamped onto the edge of the point or tip of the fender which is designated 96. By then pumping the lever 53 the rod 48 will be moved back through the body 27, or away from the head 27', thereby applying thrust to the tube 91 and causing the body to push forward against the brace arm 85. In this manner the desired spreading action upon the fender will be obtained.

Figures 15 and 16 illustrate the use, as an attachment to the pump clamp, of an adjustable fender stretcher harness whereby a forward pull may be applied to the motor vehicle fender when desired.

In these views it will be seen that the jaw unit shown in Figure 2 and mounted upon the flattened forward end of the rod 48, is employed to grip the bottom edge of the forward part of the fender, the harness referred to, and hereinafter described, being employed to attach the tool to and suspend it from the motor vehicle bumper, which is generally designated 95.

The harness comprises a pair of straps which are designated 96 and 97, each of which is preferably in two parts which may be adjustably coupled together by suitable buckles 98 and 99.

One of the straps, here shown as strap 96, is relatively short and is connected at one end with a collar 100 through which the rod 48 extends, the collar being disposed against the head 27' of the body 27. The other end of this strap carries a relatively broad hook 101 which is engaged over the top edge of the bumper as shown.

The other strap, designated 97, is of materially greater length and likewise is connected at one end with a collar 102 which also has the rod 48 passed therethrough and positions against the collar 100, while the other end of the strap has a hook 103 which is extended inwardly for engagement with a part of the fender which will enable the strap to hold the tool against outward movement.

With this harness structure it will be readily seen that operation of the pump clamp to shift the rod 48 backwardly will cause a pull to be applied to the bottom edge of the vehicle fender here designated 104, and the straps 96 and 97 will hold the rod and body securely in position.

Figure 17 illustrates another method of mounting the tool for performing the same operation as described in connection with Figures 15 and 16.

In the mounting means shown in Figure 17 there is provided a vertical rod 104 which is considerably flattened at 105 and provided with an

opening, not shown, for the extension therethrough of the pump clamp rod 48. The rod 104 carries a saddle or culcrum rest 106 which bears against the face of the bumper 107. The upper end of the rod 104 passes through the aperture 108 in the ear 109 of a link plate 110. This link plate extends laterally from the ear 109 and is disposed at an elevation above the ear and has in its outer end an opening 111 for the reception of a toothed bar which is generally designated 112.

As shown in Figure 18 the top edge of the opening 111 of the link plate 110, engages between a pair of teeth 113 of the toothed bar and an end of the bar is provided with the hook 114 for engagement over the upper edge of the bumper as shown in Figure 17.

When the forward end of the bar 48 is attached to the lower edge of the vehicle fender 115 and the lever 53 is actuated, the rod 48 will be moved back through the body 27 bringing the head of the body firmly against the forward side of the rod 102 and thus tending, by reason of the fulcrum contact 106, to oscillate the upper end of the rod forwardly thereby extering a pull upon the bar 112. Continued operation of the lever 53 will accordingly exert a strong forward pull on the fender 115 so as to pull or bend the same back to normal condition.

Figure 19 illustrates a slight modification of the construction of the forward end of the pull rod 48. In this view the rod is designated 48' and, as shown, the flattened forward end is of increased length and is provided with a downturned angled portion 116 and this portion together with the portion 117 of which it is formed as an integral part, is provided with a continuous slot 118.

At the rear part of portion 117 a transverse shoulder 119 is formed.

This angular extension 116, and the slot in the flattened forward portion 117 of the rod 48', provides for the attachment to the rod of an additional swivel jaw unit. The angle member 120 has the portion 121 provided with the threaded stud 122 which extends through the slot 118 and the free end of the portion 121 carries a transverse lip 123 which is adapted to engage behind the shoulder 119. The other portion of the angle, designated 124, is designed to receive the U-shaped jaw element 80. When an additional swivel jaw unit is being used upon this modified rod structure the angle 120 may be slipped around to position against the forward face of the angular extension 116 and another swivel jaw unit such as that shown in Figure 2 may be mounted upon the portion 117.

From the foregoing it will be readily seen that there is provided in the present invention a novel type of clamp or force applying implement which, through the use of various types of attachments, may be employed for the performance of an infinite variety of repair operations upon motor vehicle bodies and upon other types of work where it is required that the work be suspended and held firmly in a fixed position or have a pull or a thrust applied thereto.

I claim:

1. An implement of the character stated comprising a relatively long body having a longitudinal chamber therein and a passage leading from each end of the chamber through the adjacent end of the body, the body adjacent to one end being transversely cut through approximately half its diameter, the chamber opening through the side of the body adjacent to said transverse cut, the body being longitudinally slit from the said one end longitudinally to the open adjacent end of the chamber and across said transverse cut, the longitudinal slit extending into the adjacent end passage of the body, a rod extending longitudinally through the end passages of the body and through said chamber, the said transverse cut and longitudinal slit forming a split collar encircling the rod, threaded means extending transversely of the longitudinal slit for contracting the collar into gripping engagement with the rod, a lever pivotally supported within the opening leading to the side of the body from the chamber for imparting longitudinal movement to the rod through the collar, and a body gripping unit carried upon an end of the rod.

2. An implement of the character stated in claim 1, in which the said body gripping unit comprises an angle member having a base portion and a jaw portion, a threaded stud integral with the base portion and passing freely through an end of the rod, a nut threaded on said stud for securing the angle member in adjusted position, a substantially U-shaped jaw member having spaced parallel side portions forming jaw lips, a threaded stud secured through the central part of the U member and adapted to pass through an opening in the jaw portion of the angle member, to maintain said lips in opposed relation with the jaw portion, and a nut adapted to be threaded upon the last mentioned stud to effect the drawing of said lips toward the jaw portion.

3. An implement of the character stated, comprising a relatively long body having a longitudinal chamber therein and having end openings leading into the chamber, a rod extending through the body through said openings and through the chamber and adapted for longitudinal movement, a lever pivotally supported upon the body and having a portion extending into the chamber, means for establishing an operative coupling between the lever and the rod within the chamber to impart longitudinal movement to the rod in one direction upon oscillation of the lever in one direction, means within the chamber for frictionally holding the rod against retrograde movement, a tubular arm having one end of the rod extending thereinto and bearing against the adjacent end of the body, a gripping means upon the other end of the tubular arm, a tubular member having the other end of the rod extended thereinto and spaced from the adjacent end of the body, and a gripping jaw carried by said tubular member.

4. An implement of the character stated, comprising a relatively long body having a chamber therein and having alined end openings leading into the chamber, a rod extending longitudinally through the body and projecting through said end openings and adapted for longitudinal movement through the body, means carried by the body and extending into the chamber for imparting movement to the rod in one direction, means within the chamber facilitating the connection of the movement imparting means to the rod, means for securing the rod against retrograde movement, and means for coupling the implement between a motor vehicle fender and an adjacent bumper comprising a jaw unit supported upon one end of the rod for gripping the fender, and means connected with the implement for suspending the body and rod from an overlying bumper whereby the bumper may be made to function as a fulcrum for the application of a pull to the fender

by the rod when the latter is moved in one direction.

5. An implement of the character stated in claim 4, wherein the said means for suspending the body and rod from the bumper comprises a pair of collars through which the rod extends, the collars being disposed adjacent to an end of the body, and strap means connected with each of said collars and adapted to be coupled with the overlying bumper.

6. An implement of the character stated in claim 4, wherein the said means for attaching the implement to a bumper comprises a hook bar adapted to be engaged with an edge of the bumper, a rod coupled with the bar and extending downwardly across the face of the bumper, the rod being designed to fulcrum against the bumper across which it extends, said rod having an opening therethrough upon the opposite side of the fulcrum from said hook bar, through which the first mentioned rod extends, and the second mentioned rod being engaged upon one side by an adjacent end of said body.

7. An implement of the character stated, comprising a body having a longitudinal passage therethrough, said passage through a portion of its length being enlarged to form a chamber, the chamber opening through the side of the body, a rod extending through said passage for longitudinal movement in either of two directions, a lever supported in said opening and extending into the chamber for effecting movement of the rod in one direction, means for engagement by the lever for effecting the desired movement of the rod in one direction, means within the chamber for holding the rod against retrograde movement, the rod at one end being flattened and having a terminal portion extending at right angles, the flattened terminal portion of the rod having a longitudinal slot therein, and a work holding jaw unit comprising an angle member having a base and a right angularly extending jaw portion, a threaded stud carried by the base and extending through the slot to receive a securing nut, a shoulder and lip coupling between said base and the rod for maintaining the base against movement in one direction

longitudinally of the rod and a jaw element adjustably connected with said angularly extending jaw plate for coaction therewith in gripping and holding a piece of work, said jaw unit being adjustable for operation upon either of the two right angularly related portions of the flattened part of the rod.

8. An implement of the character described, comprising a relatively long body having a chamber formed therein and opening through the side thereof, the ends of the body having passages leading into the chamber, a relatively long rod extending through the passages and the chamber for longitudinal movement in either of two directions through the body, a loose collar encircling the rod within the chamber, spring means normally urging oscillation of the collar toward a position in a plane perpendicular to the rod, the collar when oscillated in one direction from said plane functioning to grip the rod, lever means for imparting movement to the rod in one direction, means within the body and engaging the rod to hold the latter against retrograde movement, a jaw unit carried upon one end of the rod, a split collar forming an integral part of said body at one end and encircling the rod, and means for contracting and expanding the collar to grip and hold the rod against movement in either of the stated two directions.

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