Oct. 19, 1943. F. H. BORM 2,332,050

BODY AND FENDER HAMMER

Filed May 17, 1940 2 Sheets-Sheet 1

Fig. 1.

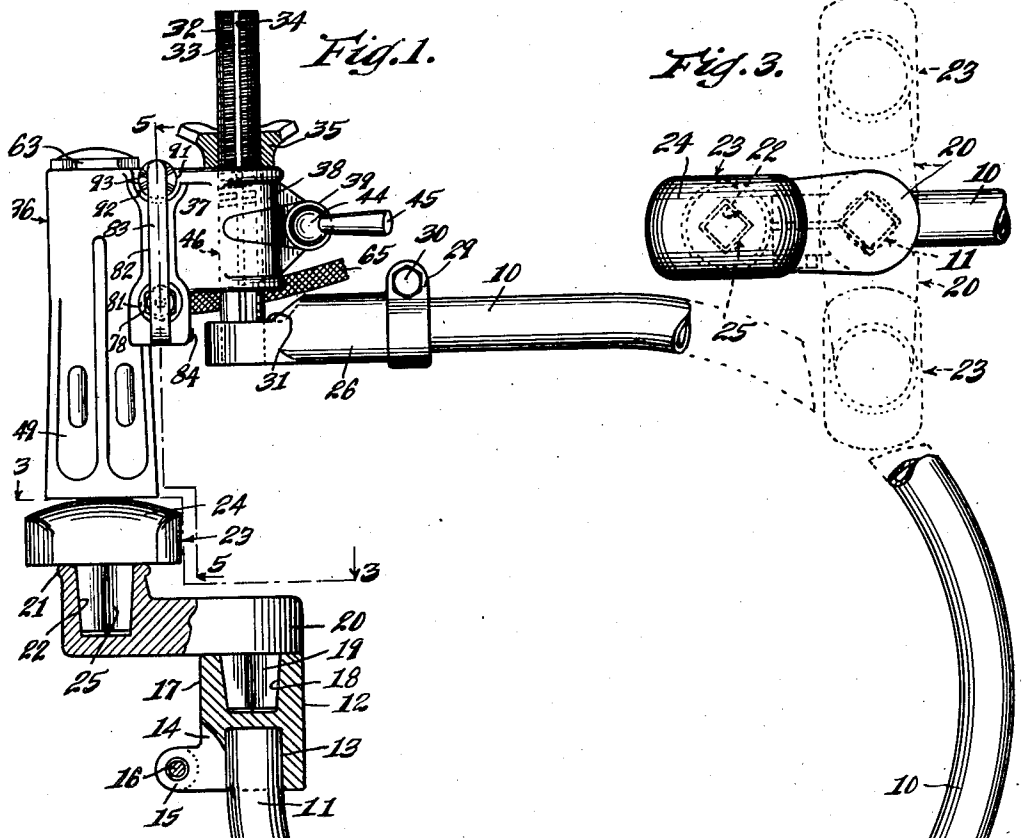


Fig. 3.

Fig. 2.

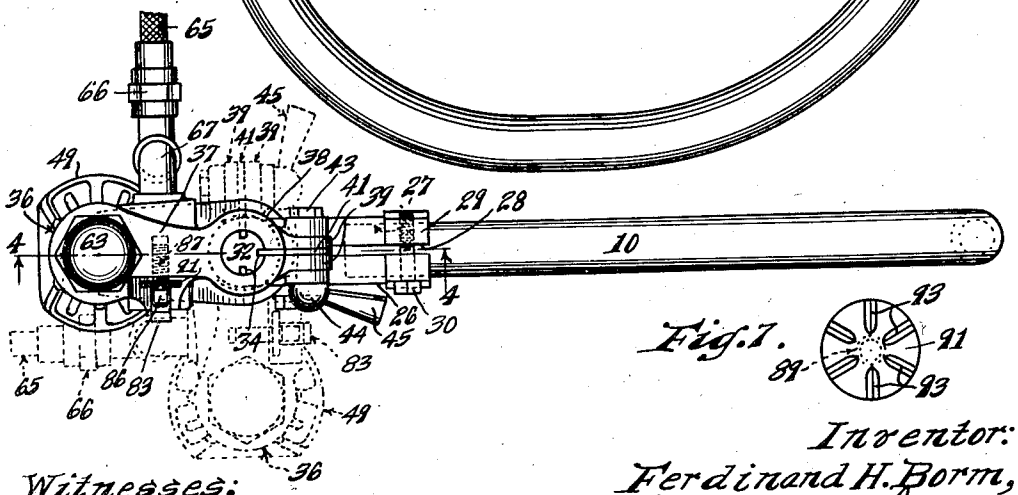


Fig. 7.

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BODY AND FENDER HAMMER

Filed May 17, 1940 2 Sheets-Sheet 2

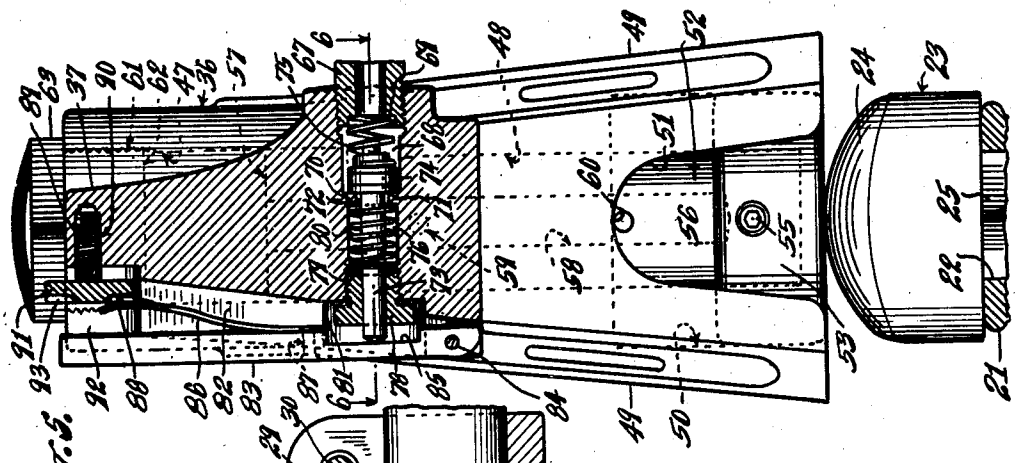


Fig. 5.

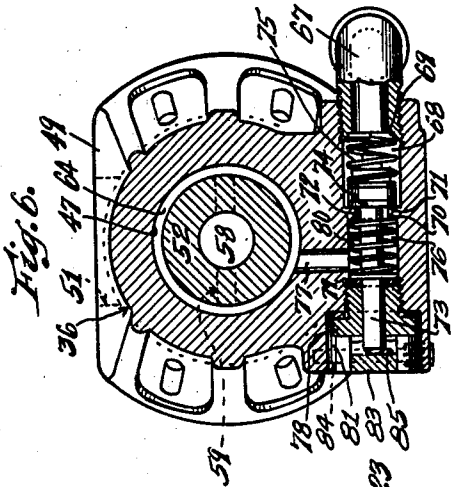


Fig. 6.

Fig. 4.

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2,332,050

UNITED STATES PATENT OFFICE

2,332,050

BODY AND FENDER HAMMER

Ferdinand H. Borm, Elgin, Ill.

Application May 17, 1940, Serial No. 335,683

7 Claims. (Cl. 153—32)

This invention relates to improvements in body and fender hammers and the like, and more particularly to a novel construction for facilitating the application of the hammer to the work and for adjustment of the hammer head and lower die, anvil or dolly horizontally on a vertical axis to different vertically aligned radial positions in connection with a holding or operating frame so as to facilitate straightening operations and removal of the device from the work with particular reference to perfect alignment of the hammer body or striker and the dolly or anvil, as well as for the purpose of making it possible to apply the hammer on a fender and place the die between the fender brace and the bottom surface of the fender to be straightened out, as well as for adjusting the hammer head vertically relative to the frame and dolly or die or dropping the frame and dolly with respect to the head to facilitate removal of the device from a fender or other work.

Another object of the invention is to provide means for making the resiliency of the frame suitable or for adjusting the same; which allows for the spring or rebounding action of the frame and the vibration effect in the frame, as well as the formation of the lower part or apron of the hammer head to permit the die to shape or push the metal upward to fit the contour of the die, particularly where, for instance, a fender may be bumped or raised in two places, spaced apart, by way of example, six inches, and the metal is thus stretched so that if the metal is not stretched too much the low portion of the metal of the fender beween said bumps may be stretched the required amount so that by finishing the fender the contour will be evened up so as not to be noticeable to the eye, instead of employing the costly method of heating and shrinking.

Another object of the invention is to provide a hammer in which the head and frame are slidably connected or free to slide on each other or a head which is adjustably mounted for vertical sliding movement whereby the head may be raised or freely drop down on the frame with the hammer head through the medium of its sleeve or the upper arm of the hammer frame sliding on the post, or the frame and die drop down away from the head when the latter is supported as on the work, whereby to quickly separate the head and die a sufficient distance so as to render it possible to more quickly apply and remove the hammer from the work and also to provide adjustment and holding means for the hammer head where the frame is supported, or the frame where the head is supported, so that any desired spring tension may be obtained against the work in connection with an adjustable or suitable resiliency of the frame.

A still further object of the invention is to provide a novel, improved and simplified valve and operating mechanism therefor, incorporated in the hammer head and constituting as a part thereof without the employment of a separate volume control valve of means to control the volume of compressed air or other fluid admitted to the hammer head for the operation of the hammer after application to the work and for subsequent control or regulation of the volume of the compressed air or fluid pressure admitted to the hammer in addition to preliminary adjustment with efficiency and dispatch as well as to any minute degree desired according to the particular work or the pressure of the blow required to accurately and properly shape the same.

Another object of the invention is to permit the hammer head and die or dolly to be swung laterally on a common vertical axis to any angular position at either side of the frame or held in a position parallel to or in the same plane with the frame and aligned therewith so as to accommodate various shapes of fenders or other work such as various portions of an automobile part, body or the like to be repaired. The repair generally consists in smoothing or ironing of dented or crumpled fenders, automobile body portions and similar parts which have been damaged. A hammer head and sleeve member on which the hammer head is pivotally mounted by means of a vertical post or axis are detachably connected at one end of a bowed frame member of resilient character, the opposite end of which is preferably arranged to support a similarly adjustable die, dolly or anvil member or holder therefor having an angular socket for the reception of different shapes and forms of dies which serve as anvils for the striker mounted in the hammer head. Therefore, the improved construction contemplates providing a relatively narrow die holder capable of adjustment so as to increase the facility with which the entire device is brought into service, that is, applied or removed from engagement with the work or part to be operated upon. Preferably, there are supplied a number of supports or frames for engagement with different shapes of parts to be repaired, and similarly there are supplied or employed different sizes and shapes of detachable dies for support in the die holder affixed to the

lower part of the frame member which may or may not be adjustable in the manner described.

Further objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings, in which:

Fig. 1 is a side elevation of a hammer partly broken away and in section and constructed in accordance with the invention, with the hammer head and connected sleeve member attached to one type of holding frame in operative position and upon which the die holder is mounted on the opposite side of the work from the hammer head;

Fig. 2 is a top plan view of the device as shown in Fig. 1 with the clamping or lock nut for adjusting the hammer head omitted and the air supply conduit swung outward;

Fig. 3 is a plan section showing the lower part of the frame member with its dolly or die holder and anvil adjusted to three positions;

Fig. 4 is an enlarged vertical sectional view taken on the line 4—4 of Fig. 2 of the hammer head and die holder;

Fig. 5 is a vertical sectional elevation taken on the line 5—5 of Fig. 1;

Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 5; and

Fig. 7 is a detailed view of the head of an adjusting screw for volume control of the operating valve.

Referring more particularly to the drawings, 10 designates a holding frame which may be formed of spring or resilient tubing or a steel bar bent in bowed or substantially circular formation and adapted to straddle a fender or body part or other section of sheet metal for working engagement or operation, usually a dented or crumpled automobile fender or body portion. The lower extremity, arm or portion 11 of the frame member 10 is curved upwardly to support a lower die holder or socket 12 which is preferably affixed rigidly thereto but adapted to be released and turned, if desired. The frame member extends within a bore 13 in the lower portion of the die holder which is in the form of a sleeve having a transverse intermediate partition or end wall engaged by the upper end of portion 11 of the frame and a split or slotted portion 14 at the lower portion or hub thereof and provided with clamping ears 15 connected by a locking pin or clamping bolt 16 by which the die holder may be held against angular turning on the portion 11 of the frame or released and adjusted if desired. The upper portion 17 of the socket or die holder 12 or sleeve composing the same above the intermediate partition may be provided with an angular socket 18 of square or other polygonal cross section to receive a similarly shaped shank or post 19 of a die holder arm 20 of the die holder proper having a hub 21 at its free end facing upwardly and provided with an upwardly opening angular socket 22 in which the shank of a suitable die 23 of the dolly or anvil is removably mounted against turning. This die 23 may have a convex or other similar active surface or head 24 at the top of a depending angular extension post or shank 25 to fit the socket 22 permitting the die to be turned in different angular positions preferably with adjustments of 90 degrees, while the arm 20 and die holder may also be turned on the part 11 of the frame to extend parallel to, in alignment with or in the same plane as the frame, or adjusted horizontally on a vertical axis laterally at either side and preferably at positions normal or at right angles to the position shown in Figs. 1 and 3 in solid lines as indicated in dotted lines in Fig. 3, or other angles, or arm 20 displaced and angularly adjusted.

The upper horizontal portion of the frame 10 extends to a position in close proximity to a vertical extension of the part 11 and has a handle forming sleeve 26 rigidly mounted on or affixed thereto through the medium of a bore 27 in the split or slotted sleeve 26, as shown at 28 which provides jaws having apertured ears 29 for the reception of a locking pin or clamping bolt 30 by which the sleeve may be firmly held against turning on the frame. The sleeve 26 has a horizontally flattened extension 31 extending forwardly adjacent the bottom thereof which may be bored out vertically to take a vertical post 32 which is sweated, chilled, pinned, keyed, or otherwise rigidly secured in position against turning. This vertical post has an upper threaded portion 33 and longitudinal peripheral spline grooves 34, preferably three in number, ninety degrees apart at the inner and side portions thereof, or otherwise positioned as desired, and the threaded portion is adapted to take a clamping head or lock nut 35 preferably winged, as shown, to facilitate turning and tightening thereof. This constitutes means to make the resiliency of the frame and tension against the work or ability of the frame to react against the work suitable or to adjust the same as desired.

The hammer head is designated at 36 and has an upper vertical lateral inward extension 37 at the top in the form of a web or block preferably formed integral with the hammer head or motor body and terminating at its inner end in a vertical split sleeve 38 having arcuate jaws and apertured ears or wings 39 normally slightly expanded or spaced apart so that the sleeve is loose on the post 32 and a flat spline plate or key 40 positioned between the ears or wings 39 to engage grooves 34 and hold the hammer head rigid in adjusted angular position. This key is substantially T-shaped, as shown in Fig. 4 of the drawings and formed with an extension ear 41 corresponding to the ears 39 to take a locking pin or bolt 42 having a head 43 against the outer face of one wing and a nut 44 on the threaded end thereof with an operating arm or handle 45 by which it may be tightened to clamp the sleeve 38 in a fixed position of vertical adjustment on the post 32 which constitutes an axis vertically aligned with respect to the axis of the die holder 20 and consequently the portion 11 of the frame 10 on which the same is mounted, and thus also the axis of the split clamp or sleeve 12 and the shank 19 of the die holder or arm so that these parts turn on the same vertical axis. Of course, the nut 44 may be loosened or left loose so that the sleeve 38 and the hammer head 36 may freely slide on the post 32 between the surface 31 and the nut 35. The sleeve 38 has a smooth bore 46 which receives or engages over the post to freely slide vertically thereon including the threaded part 33 when the sleeve 38, bolt 42 and nut 44 are loose and not clamped on the post 32 and the hammer head may be held in an outward position aligned vertically with the die holder 21, arm 20 and die 23, parallel to or in the same vertical plane with the frame 10 by positioning the key or spline 40 in the intermediate groove 34. However, by loosening the nut 44 and clamping bolt 42 and releasing the grip on the post 32 at the sleeve 38, the hammer head may be adjusted laterally and horizontally to different positions on its vertical axis by displacing the head or sleeve 38 from the post 32

and then replacing the same at the desired angle or position to cause engagement of the key 41 with either of the other grooves 34 normal or at right angles to the frame 10 or at any other adjustment according to the number of grooves 34 provided in the post or by omitting the grooves and spline, the head, as well as sleeve 12, may be adjusted to any angle to be firmly held and still have these parts and the head and die in vertical alignment.

When the striker of the hammer head 36 contacts with the die of the dolly or anvil, the sleeve 38 will be normally held from moving downwardly further assuming that the frame 10 is supported, but when the frame 10 is under tension, the sleeve 38 will move upwardly on the post 32 in a limited path when the sleeve 38, bolt 42 and nut 44 are loose, and may be held in this position or limited in its upward movement by the nut 35, although otherwise the hammer head will drop until the sleeve 38 engages the flattened extension 31 of the sleeve 26. Also, with the sleeve 38 loose on the post 32, the hammer head as normally supported by the anvil or die 23 will be slightly raised on the post 32 with the lower end of the sleeve 38 spaced from the flattened extension 31, but the resiliency or spring in the frame or arms thereof and engagement of the top of the sleeve 38 by means of the nut 35 and adjustment of the latter on the threaded portion 33 of the post 32 so as to press down on the hammer head 36 or permit upward movement thereof under tension of the resilient frame 10 to raise the sleeve 38 on the post 32 to the nut 35 can be made suitable or adjusted as desired according to the nature of the work and in connection with the impact of the hammer and the vibration thus produced will act to spring the lower part of the frame downwardly with the sleeve 38 against the nut 35 or moving downwardly away from the same on the post 32 which will result in a rebound or kickback thereof and limited upward movement of the hammer head and the upward flexing of the frame 10 or the upper and lower portions thereof so that the desired tension and upward impact of the die 23 against the bottom of the work may be had after a blow of the striker to depress or flex the lower part of the frame downwardly and the latter reacts or rebounds by its resiliency upwardly against the lower end of the head; since the striker having been released of pressure thereagainst is free to rise. The flattened extension 31 may be contacted by the bottom of the sleeve 38 if the hammer head 36 is supported or held to permit the frame and die to drop or move downwardly with the sleeve 38 sliding down on the post 32 or vice-versa, when loose thereon and not clamped or held by the bolt 42 and the nut 44, that is to permit head 36 and sleeve 38 to be moved up when the frame and die are supported, especially by raising or turning the nut 35 upwardly, thus separating or giving additional movement to these parts to facilitate removal of the device from a fender and especially from between the same and a brace. Normally, unless the spline and grooves are omitted as previously described, when it is desired to adjust the hammer head at either side, the nut 35 is unscrewed from the post 33 and the nut 44 if tight, is loosened to release the sleeve 38 from its grip on the post so that the hammer head may be raised to remove or displace it from the post 32 by sliding the sleeve vertically upwardly off of the post or moving the post downwardly in and from the sleeve with the key 40 sliding in its groove 34. Obviously, when the spline and grooves are omitted and the nut 44 is loose, the sleeve 38 may be freely turned on the post 32 to swing the head 36 to any angle at either side over the die with its holder sleeve 12 turned on the frame portion 11. By replacing the hammer head in a position to extend laterally at either side or at a 90 degree angle in the form shown, the key 40 may be caused to slide into either one of the other grooves 34, after which the nut 35 is adjusted to obtain a suitable resiliency or tension against the work and with the sleeve 38 against the nut 35 but if desired to hold the head against movement at the sleeve 38 on the post 32 friction is applied to clamp the hammer head in position at any desired point of vertical adjustment and radial angle horizontally in connection with the clamping of the split sleeve 38 by tightening the nut 44 which is facilitated by the handle 45 so that the hammer head may be positively held in adjusted position. Of course the sleeve 12 may be correspondingly radially positioned on the frame portion 11 by releasing its grip thereon and again tightening same. However, this is ordinarily effected by displacing the die holder and arm 20 at its shank 19 from within the socket 18 and replacing the same at the desired angle where it will be held from turning with the removable anvil of the die or dolly properly positioned beneath the hammer head with their axes vertically aligned.

The hammer mechanism per se may be of conventional type but as shown, the upper portion of the hammer head is provided with an enlarged central chamber or bore 47 and a reduced lower or central bore 48 forming the hammer cylinder with an enlarged flared or apron portion 49 open at the bottom communicating with an enlarged bore 50 in the apron forming a socket which opens into diametrically opposite vertical slots or openings 51 extending through its bottom edge and preferably positioned at the front and rear and tapering upwardly or enlarging downwardly and of somewhat arcuate formation. These slots, instead of being positioned at the front and rear, when the hammer head extends forwardly in the plane of the frame, will be disposed laterally or to the sides when the hammer head is adjusted at right angles across the die or swung horizontally when turned on the post 32 as a vertical axis to position the hammer mechanism in a projecting position at either side of the frame at an angle of 90 degrees or otherwise with respect thereto, depending upon the number of spline grooves or the position in which the split sleeve is clamped in the event that the spline or key and its grooves are omitted. It will be observed that this construction including the splined or keyed guiding means and the vertical adjustment of the sleeve 38 on the post 32 by nuts 35 and 44 constitutes means for adjusting the resiliency and force of the return rebound or kickback blow of the lower portion of the frame and die as well as holding the hammer head in adjusted operative position vertically and laterally and that its vertical position, tension and force and effect of the rebound desired will depend upon the type of die or anvil and the thickness or nature of the work being operated upon. A piston or striker 52 is positioned to reciprocate within the bore 48 and has mounted thereon a striker head 53 secured by a pin or set screw 54 threaded through the wall of the striker head which has a socket at the top receiving the lower end of the striker and a radial socket receiving the inner

end of the pin or set-screw 54 which latter may have a socket 55 for a hex-wrench to tighten or release the set-screw so that the striker head may be removed or replaced, if desired or found necessary. The striker head is mounted on a shank portion 56 of the piston or striker which extends through the enlarged bore 50 forming an annular chamber around the shank and between the same and the bored lower portion 50 of the enlarged wall or apron 49. The upper portion of the piston or striker is enlarged as at 57 to operate in the enlarged bore or chamber 47 and the striker has an axial or central bore 58 of reduced diameter extending through the top into the enlarged chamber or bore 47 and down to a point spaced from the lower end of the shank portion. The reduced portion of the piston 52 has diametrically aligned radial inlet ports 59 extending therethrough spaced below the enlarged portion 57 to admit air or other compressed fluid into the bore 58 and thus through the bore 58 to the enlarged chamber 47 above the upper end of the piston or striker 52. The piston 52 is also provided at its juncture with the shank, bore 50 and slots 51 with similarly related exhaust ports 60 which communicate with the bore 58 spaced above its lower end and also with the annular chamber or enlarged bore 50 at the lower portion of the hammer head. The upper portion of the bore 47 is internally threaded as at 61 to receive a threaded plug 62 for closing the upper end of the bore or cylinder and may have a wrench head 63 to facilitate application or removal thereof. Between the enlarged portion 57 in the enlarged bore 47 and the opposed annular shoulders thus formed at the lower end of portion 57 and the upper end of the reduced bore portion 48, an annular chamber 64 is produced for a purpose to be subsequently described.

The compressed air or other fluid is supplied to the hammer through a conduit 65 which preferably extends along the side of the frame 10, but is shown in Fig. 2 extending out at right angles for the sake of convenience. This conduit may be connected by a coupling or union 66 with an elbow 67 commonly referred to as a street-L threaded into a transverse bore or air receiving chamber 68 through the web or extension portion 37 of the hammer head, although any other desired form of fitting may be employed. The inner end of the elbow or fitting is shown countersunk as at 69 to provide a retaining seat and the bore or chamber 68 has an annular rib or flange 70 intermediately of its ends forming a seat 71 with an axial opening or port 72 slightly larger than a valve stem 73 of a valve operating in said bore and having an enlarged head 74 positioned to engage the seat 71. This valve constitutes both an operating valve and a control valve for the volume of compressed air or other fluid admitted to the chamber and to the hammer mechanism, and for this purpose is held normally seated by a spring 75 disposed in the seat 69 and engaged on the adjacent end of the valve stem or a reduced portion of the valve head, as more particularly shown in Figs. 5 and 6 of the drawings. On the other side of the rib or flange 70, which may be integral with or formed separate from the wall of the hammer head or web portion, is a discharge bore or chamber 76, and whereas the bores or chambers extend transversely and horizontally, an inlet port 77 leading therefrom to the cylinder chamber 64 at the discharge chamber 76 extends at an intersecting angle, preferably normal thereto, but also horizontally. A packing gland or nut 78 is threaded in the opposite end of the valve bore and has a packing 79 at its inner end held seated by a spring 80 in the chamber 76 with its inner end engaging the rib or internal flange 70 on the side opposite the valve head 74. The valve stem 73 extends through the flanged and knurled packing gland or nut 78, but the escape of the compressed air or other fluid is prevented by the packing 79. The enlarged head of the packing gland or nut 78 and the adjacent projecting end of the valve stem are accommodated in a counter-bore 81 in the adjacent side of the hammer head and a vertical groove 82 in the side of the hammer head adjacent the web portion 37 intersects and extends upwardly from the counter-bore 81 to form a seat and guideway for an operating lever or finger piece 83 which is thus protected against injury by the side walls or ribs of the groove. This lever 83 is pivoted at 84 in the lower portion of the groove by means of a screw pin, also shown in Figs. 5 and 6, and the inner face of the lever near the pivot is provided with a counter-bore 85 forming a cut-out or transverse groove to accommodate and straddle the adjacent end of the valve stem and the packing gland or nut 78 at the head thereof. A bowed spring 86 is riveted or otherwise anchored at 87 near its lower end to or through the lever 83 and its upper or free end portion is curved inwardly and provided with a longitudinal or radial rib 88 on its inner face with the extremity of the spring turned outwardly. An adjusting and control screw 89 is threaded in a bore or socket 90 in the wall of the hammer head 36 or web 37 thereof near the top thereof and an enlarged knurled head 91 is provided on the screw and accommodated in a counter-bore 92 communicating with the groove 82 at its upper end adjacent the top of the hammer head and at its web portion so that the head 91 of the screw projects slightly above the top of the hammer head and web to permit convenient turning thereof. The outer face of the screw head has a plurality of radial notches 93 which are individually engaged by the rib 83 of the spring 86 so that the springs 75 and 86 not only serve to hold the lever outwardly away from the valve stem so that the valve head 74 is normally seated to cut off the flow of compressed air, but the spring 86 also serves to hold the adjusting screw in adjusted position to limit the degree of depression movement of the lever and consequently the degree of opening of the valve so that the valve not only serves as an operating valve, but also to control or regulate the volume of compressed air to be admitted to the hammer whereby the operation and effective blows of the striker against the work and anvil may be regulated to a nicety.

The method of operation will be mainly understood from the foregoing description of construction. However, before the device is applied to the dented or damaged parts to be properly shaped or restored to their original condition, the hammer head or motor body through the medium of the arm or web portion 37 and supported upon the upper arm of the frame 10 through the medium of the post 32 is first raised upon the post by a vertical sliding movement after releasing the clamping heads or nuts 35 and 44 or as seen in Fig. 1, raised against the nut 35 with the nut 44 loose, after which the hammer head is adjusted resiliently against the work or in proper relation thereto by sliding it downwardly on the post and then tightening

the nuts 35 and 44 or with the nut 44 loose, merely turning the nut 35 down against the sleeve 38 to spring the frame 10 at the desired tension with the bowed frame member embracing the work and the die engaging the bottom thereof. By bringing the lower portion of the hammer head into contact with the upper surfaces of the parts to be worked upon, it is merely necessary to employ the frame member as a holder for the entire device and by forcing this member, the hammer head is locked or held by nut 35 or both nuts 35 and 44 into operating position with the reciprocating striker in alignment with the die supported by the die holder. With the nut 44 loose, the hammer head 36 is free to move up and down between the nut 35 and the surface 31. The amount of compressed air admitted depends upon the character of the work and the force of impact of the striker may be controlled accordingly by the adjustment of the valve which may be regulated from time to time by manipulation of the adjusting screw 89 through the medium of its head 91, after which the operation is controlled by the operating valve through the medium of the finger piece or lever 83 which is depressed to shift the valve for the one purpose of opening the same while release of the lever will permit the valve to close automatically under the action of the air and the springs 75 and 86. Air is supplied through the conduit 65 to the receiving chamber 68 and when the valve 74 is opened by depression of the lever 83 and stem 73, the air is admitted through the port 72 to the discharge chamber 76. From thence, the air passes through the inlet 77 to the cylinder at the chamber 64 to cushion the down or power stroke, assuming that the parts are in the positions shown in Fig. 4 of the drawings. This forces the enlarged upper portion 57 of the piston or striker proper 52 upwardly in the bores or chambers 47 and 48 of the cylinder thus raising the striker since air will be prevented from entering the inlet ports 59 but cushioning the upward or return stroke by the compression of the air in the top of the bore 47. However, when the ports 59 are aligned with the chamber 64 and inlet port 77, the air will pass into the central bore or chamber 58 to act on the lower end thereof and also above the enlarged portion 57 of the piston or striker to force the same downwardly to the position shown in Fig. 4 to exhaust through the ports 60. When the piston is raised the exhaust ports 60 will be closed by the wall of the bore 48 until on the down stroke, the exhaust ports have reached the openings 51 or the enlarged bore 50 when the compressed air will be discharged through the exhaust ports 60 and the down stroke cushioned by the compression of the air in the chamber 64. This operation is repeated at each reciprocation of the striker. The kind of work dictates the selection of a frame member for proper cooperation with the hammer head and it will also be understood that by positioning the hammer head or motor body at either the right or left hand side and correspondingly positioning the anvil by turning or adjusting the same on vertical axis in the manner previously described, the device is especially capable of quick application and removal from the work while with the nut 44 loose the adjustment of the nut 35 to force the hammer head downwardly against the resiliency of the frame 10 and the work between the striker and the anvil or die any desired tension against the work may be obtained. This is due to the particular manner in which the hammer head is mounted for sliding movement on the post and capable of being held against accidental turning thereon horizontally on a vertical axis by the spline or key and groove or nut 44 if the former are omitted, or both. By making it possible to swing or adjust the motor body or hammer head, as well as the die or dolly, to either side by reason of the special arm or goose-neck construction, it is possible to apply the hammer on a fender and place the die between a fender brace and the bottom surface of the fender to be straightened out or any other inaccessible places which were heretofore difficult to obtain access to or apply the hammer, if not impossible, thereby greatly facilitating work of such character. By having a skirt or apron at the lower portion of the body enlarged and flared outwardly and downwardly together with the concaved slots or openings 51 at diametrically opposite sides through its wall communicating with the enlarged bore or socket 50, it is possible to shape the metal in a manner which could not heretofore be done. For instance, if a fender is bumped up in two places, say six inches apart, so that the metal at these two points is naturally stretched, if the stretch is not too severe the low portion of the metal between may be stretched the degree necessary to strain or straighten and smooth out the metal and even up the contour so that by finishing the fender or other similar work, the imperfection will not be noticeable to the eye. This action is obtained due to the resiliency of the frame and the upper and lower portions or arms thereof so that each impact will produce sufficient rebound and the vibration is strong enough to shape the metal upward to fit the contour of the die at the openings 51. This results from the fact that owing to the resiliency of the frame, the piston striker hits on the metal against the die to depress the latter while the head 36 may move down at the sleeve 38 on the post 32 to the surface 31 or to separate the two resulting in the vibration of the spring furnishing sufficient return blow to shape the metal from the bottom to the shape of the die. Of course, dies of different convexity or other shapes may be employed and the steeper the curvature and the wider the opening 51 in the skirt of the motor body, the higher and bigger the radius will be. To eliminate the upward stretch or reduce the degree thereof, a die having less convexity is employed and this stretch may be reduced to a minimum by using a flat die which substantially conforms to the bottom of the motor skirt and the striker head, the shape of which may also be varied. It is to be understood that the hammer head and die are both adjusted to the same radial or vertically aligned positions so that the die part will always line up with the position of the motor body or striker. It should also be noted that the valve is of simple construction and that by merely unscrewing the elbow or other fitting 67 for the hose connection, the valve will drop out by tilting the body or may be easily removed since there are no connections with the valve stem at the lever or enlargements on this end of the stem which is of uniform diameter throughout, except at the valve head end. The simplicity of the valve is apparent since the lever is fastened by a single pin 84 and the engagement of the lower end of the lever with the bottom wall of the groove or guideway 82 limits the outward movement of the lever 83 to a re-

leased position with the valve closed. The spring on the lever forcing inwardly on the rib or pawl 88 engaging the radial notches 93 acts as a friction on the air adjustment screw 89 to hold it in whatever position desired so that the volume of air can be regulated as desired to thereby control the impact of the hammer merely by manipulating the knurled head 91 with the rib 88 snapping into and out of the notches 93 as the required adjustment is effected. By swinging the motor body to either side in connection with the proper die holder makes it convenient to place the die around and in back of obstructions such as fender braces and the like.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A body and fender hammer comprising a resilient bowed holding frame, a motor body mounted to slide vertically on one end of the frame and offset therefrom for horizontal adjustment radially and a die holder on the lower portion of the frame and offset therefrom for adjustment radially in vertical alignment with the motor body.

2. A hammer of the class described including a resilient frame having upper and lower supporting portions, an upright post on the free end of the upper portion, a die holder having a radial extension mounted for lateral adjustment on the lower supporting portion, a hammer head having a radial extension laterally and vertically adjustable on the post and adapted for free movement vertically in alignment with the die holder in a position extending laterally or forwardly with respect to the frame, means to maintain the hammer head in axial alignment with the die holder and a die in the holder.

3. A body and fender hammer of the class described comprising a frame having upper and lower supporting portions, a hammer head on the upper portion, a die on the lower portion, both the head and die being offset and swingable horizontally on a common vertical axis and adapted to be held in any lateral position, fluid pressure supply means communicating with the hammer head, a striker actuated thereby, a valve controlling the supply and held in position by the supply means, a lever on the side of the hammer head for depressing the valve to open the same and means for adjusting the degree of depression of the lever.

4. A hammer of the character described, comprising a substantially U-shaped resilient holding frame having upper end lower portions, a die holder mounted on said lower portion, a die on said holder, a hammer head substantially in alignment with said die holder and mounted on said upper portion for free sliding movement toward and away from said die holder while in alignment therewith, means for limiting sliding movement between said head and said upper portions, guide means for holding said head in alignment with said die holder during said free sliding movement, and a striker assembled for reciprocating movement in said head and in alignment with said die.

5. A hammer of the character described, comprising a substantially U-shaped resilient holding frame having upper and lower portions, a die holder mounted on said lower portion, a die on said holder, a hammer head substantially in alignment with said die holder and mounted on said upper portion for free sliding movement toward and away from said die holder while in alignment therewith, means for limiting sliding movement between said head and said upper portions, said limiting means including means for tensioning said head against the work which is interposed between said die and head, guide means for holding said head in alignment with said die holder during said free sliding movement, and a striker assembled for reciprocating movement in said head and in alignment with said die.

6. A hammer head of the character described, comprising a substantially U-shaped resilient holding frame having upper and lower portions, a die mounted on said lower portion, a hammer head substantially in alignment with said die and mounted on said upper portion for free sliding movement toward and away from said die while in alignment therewith, said upper portion limiting said sliding movement in one direction, adjustable means for limiting said sliding movement in the other direction, said adjustable means also constituting means to tension said head against the work, guide means for holding said head in alignment with said die during said free sliding movement, and a striker assembled for reciprocating movement in said head and in alignment with said die.

7. A hammer of the character described, comprising a substantially U-shaped resilient holding frame having upper and lower portions, a die holder pivotally mounted on said lower portion and having a die-receiving recess offset from said pivotal mounting, a die in said recess, means for holding said die holder in an adjusted position, a hammer head pivotally mounted on said upper portion on a pivotal axis substantially in alignment with the pivotal mounting of said die holder with the hammer head substantially in alignment with said die, said hammer head having free sliding movement on its pivotal mounting, guide means for holding said head in alignment with said die during said free sliding movement, and a striker assembled for reciprocating movement in said head and in alignment with said die.

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