

(No Model.)

2 Sheets—Sheet 1.

H. K. PORTER.
BOLT CLIPPER.

No. 584,191.

Patented June 8, 1897.

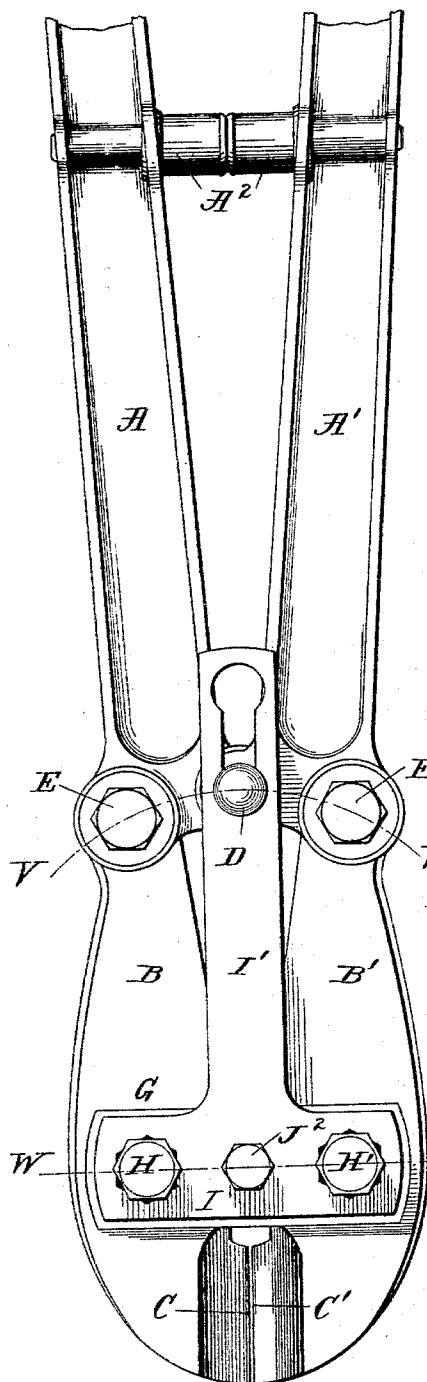


Fig. 1.

Witnesses:
J. C. Dr. Cochr
J. A. Harrison

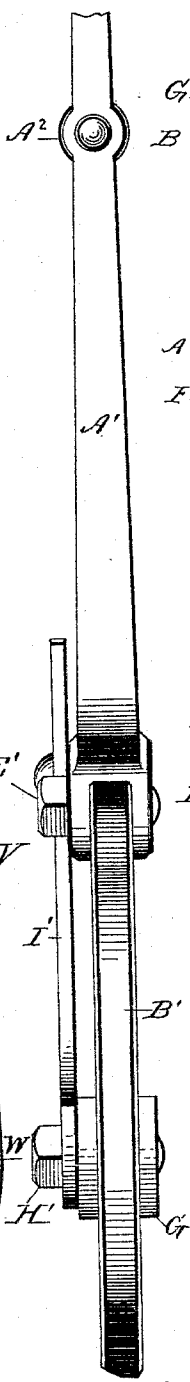


Fig. 2.

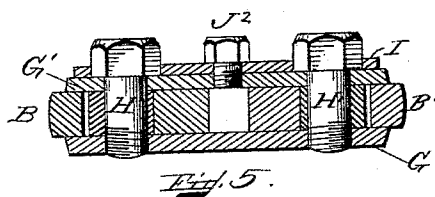


Fig. 5.

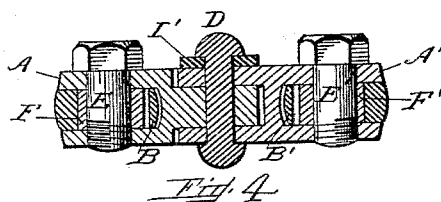


Fig. 4.

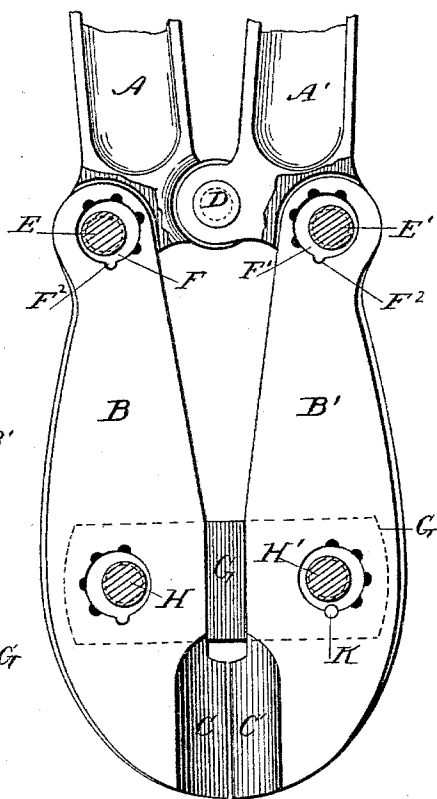


Fig. 3.

Inventor:
Henry K. Porter
per Eugene Humphrey Atty

(No Model.)

2 Sheets—Sheet 2.

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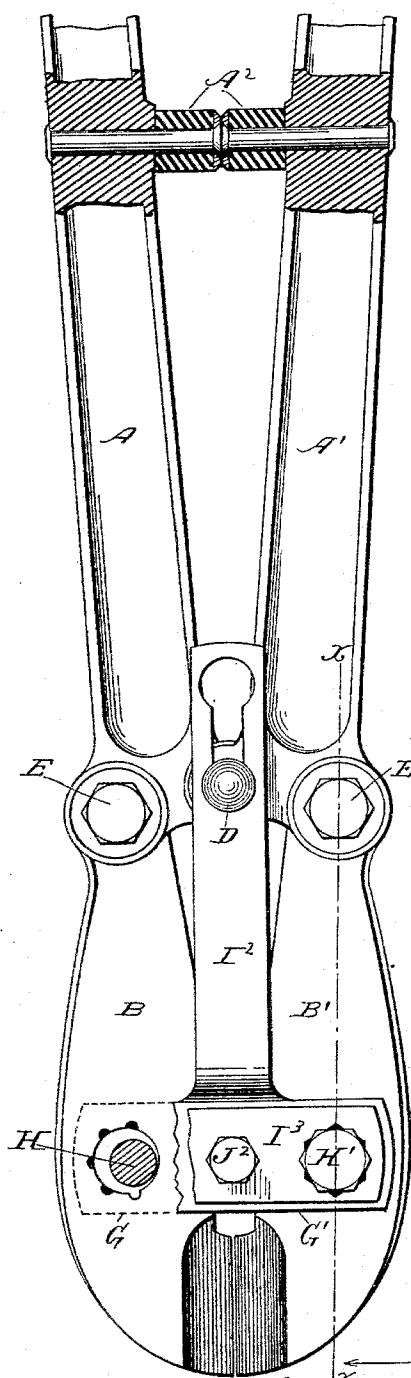


Fig. 6.

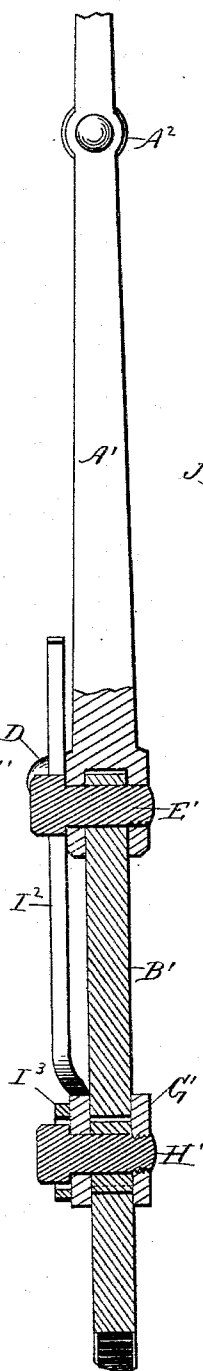


Fig. 7.

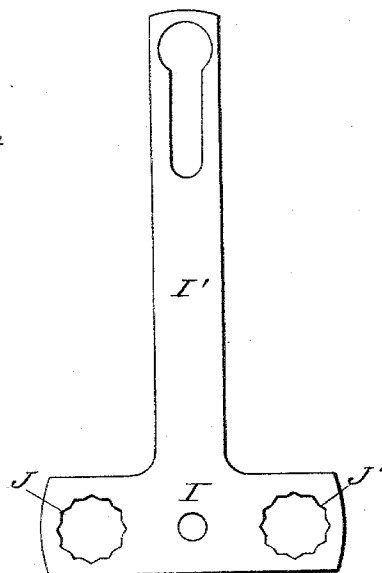


Fig. 8.

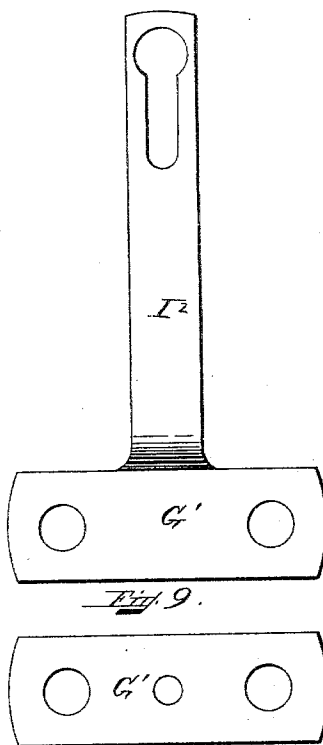


Fig. 9.

Fig. 10.

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Inventor:
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UNITED STATES PATENT OFFICE.

HENRY K. PORTER, OF CHELSEA, MASSACHUSETTS.

BOLT-CLIPPER.

SPECIFICATION forming part of Letters Patent No. 584,191, dated June 8, 1897.

Application filed February 10, 1897. Serial No. 622,834. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. PORTER, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Bolt-Clippers, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

Referring to the drawings, Figure 1 is a plan of the bolt-clipper embodying my invention, the outer ends of the handles thereof being omitted to economize space in drawing. Fig. 2 is a side elevation of the same. Fig. 3 is a plan of the clipper with the combined locking and controlling plate shown in Fig. 1 removed and the handle-levers broken away to show the means and method of adjustment of the cutting-levers at four points around the pivotal connections shown in section. Fig. 4 is a section taken as on the curved line V V, Fig. 1. Fig. 5 is a section taken as on line W W, Fig. 1. Fig. 6 is a plan similar to Fig. 1, but a portion of the handles being in section to disclose the buffer-studs, the rubber cushions thereon being also in section, and showing also a modification of the plate which connects the fulcrums of the cutting-levers with the common fulcrum of the handle-levers, the plate in this case serving as a combined strap and controlling-arm, the strap portion being broken away to disclose one of the adjustable fulcrums of the jaws and the arm portion having an upward curve. The figure also shows a portion of a separate locking-plate which secures the fulcrum-bolts from turning by the action of the clipper when in use. Fig. 7 is a sectional elevation, the section being taken as on line X X, Fig. 6. Fig. 8 is a detached plan of the combined controlling and locking plate, which is shown in place in Fig. 1 and in side elevation in Fig. 2. Fig. 9 is a detached plan of the curved plate which serves as a combined strap and controlling-arm and is shown partly in place in Fig. 6 and in sectional side elevation in Fig. 7. Fig. 10 is a plan of the top strap, which is shown in section in Fig. 5.

My present invention is an improvement upon the invention described in Letters Patent of the United States, numbered 520,896, issued to me June 5, 1894. As in my said former patent, the clipper shown in the draw-

ings consists generally of a pair of handle-levers pivoted together, a pair of cutting levers or jaws pivoted to the handle-levers, two transverse straps, one upon the upper and one upon the under side of the cutting-levers and bolted together through holes in the cutting-levers and serving to hold the cutting edges on a level with each other and to support the fulcrums of the levers. Having as a part of my present improvements introduced means for adjusting said fulcrums so as to produce lateral adjustment of the cutting-levers at those points, I have had to dispense with the interlocking teeth formed on the levers or jaws, as shown in my said former patent, and have substituted for the same purpose the devices hereinafter described.

My invention relates, mainly, to improvements, which will be fully described, whereby I am enabled to obtain a more varied and perfect adjustment of the cutting edges of the clipper than has hitherto been accomplished for the purpose of securing and maintaining under all practical conditions of use and wear a substantial parallelism of the cutting-jaws of the clipper when in their nearest approach to each other, my new mode of adjustment enabling me to maintain such parallelism even when the cutting edges have been nicked and unevenly worn by practical use and considerably reduced and changed by the process of sharpening, thus necessitating a change in the relative position of the jaws through adjustment of the cutting-levers at their pivotal points to compensate for such change by wear and reduction and to cause them again to properly approach each other. Around all four of the pivotal bearings of the cutting-levers I place adjustable eccentric bushings, and by such combination of adjustable bearings I can obtain a differential and nicer regulation of the positions and movements of the cutting-jaws relative to each other than can be obtained by such means of adjustment in a single pair of pivotal bearings at the ends of the levers, as in my said former patent.

Referring to the drawings, A A' represent the handle-levers, B B' the cutting levers or jaws, and C C' the cutting edges of the jaws. The bolt D unites and serves as the common fulcrum of the two handle-levers. The short arms of the handle-levers are pivotally con-

neeted with the long arms of the cutting-levers by the bolts E E' in the manner shown in Fig. 4. To the bolts E E' are fitted eccentric bushings F F', and the exteriors of the bushings are formed with ribs F² and fit into holes in the ends of the cutting-levers adapted to receive them, the holes having interior recesses in the edges thereof corresponding to the ribs on the eccentrics with which they adjustably interlock, as shown in Fig. 3. These bushings are capable of adjustment in various fixed positions around their respective bolts E E' by means of said interlocking ribs and recesses, whereby the eccentricity of the bushings is utilized to change the positions of the ends of the cutting-levers to adjust in a smaller degree the relations of the cutting edges C C'. A pair of clamping-straps G G', extended transversely on opposite sides of the cutting-levers and between which the levers are supported and moved and which also serve to support the fulcrums of the levers and to hold their cutting edges on a level with each other, are connected through holes in the levers by bolts H H', as shown in Figs. 1 and 5. These bolts, as shown, have hexagonal heads which bear upon the top of strap G' and at their opposite ends are threaded into strap G, and by turning the bolts the two straps may be drawn toward each other and thus clamp the levers between them for the purposes stated. I also surround these bolts with eccentric bushings like those employed around the pivot-bolts E E' in the rear ends of the cutting-levers and made adjustable in like manner, the holes in the levers being adapted to the bushings for that purpose, the bushings in this case rendering the levers adjustable on their fulcrums, thus changing in a greater degree the relative positions of their cutting edges C C'. In Fig. 3 a pin K is shown as a substitute which it is obvious might be used in place of the ribs of the eccentrics, provided recesses were formed in the eccentrics instead of the ribs thereon, the pin being inserted partly in the recess in the eccentrics and partly in a corresponding recess in the cutting-lever; but I consider the ribs preferable. To accomplish the double purpose of locking the fulcrum-bolts H H' against being turned by the action of the clipper when in use or in any other manner, and thereby unduly pressing the straps together upon the levers, or by turning in the opposite direction becoming too slack, and of holding said fulcrums firmly in connection with the common fulcrum of the two handle-levers for the purpose of controlling the jaws and holding the cutting edges in proper opposition to each other, I employ a controlling-plate I. (Shown in plan in Fig. 8 and in place on the clipper in Fig. 1.) This plate is provided with interlocking holes J J' and a smaller central hole J², by which it is bolted to the top strap and thus secured in place, as shown in Fig. 5. The edges of holes J J' are each formed with twelve reëntering angles, any six

of which will at one time interlock with the six salient angles of the hexagonal heads of bolts H H' when the bolts are in position to receive the same, and thus the bolts may be thereby securely locked in position when their heads are turned one-twelfth of a revolution, and at every such turn, for the purposes stated. At the same time when the controlling-plate is thus secured to the strap it will by means of its arm I' connect the fulcrums H and H' with the movable fulcrum D of the handle-levers, as shown, and thereby control the cutting-levers when the cutter is operated, so as to keep the cutting edges in proper opposition to each other, as required, by preventing the operation of the handles from thrusting one cutter forward of the other, so that a portion thereof will then have no opposing blade. If the bolts H H' were inverted and their heads were secured in the under strap, while their threaded ends projected above the top strap, as has been done, and nuts of hexagonal or other angular forms were employed upon the upper ends of the bolts to secure the bolts and straps in place, the nuts would interlock with suitable angular holes in the controlling-plate in the same manner and with the same results as in the case of the interlocking of the heads and plate above described. The controlling-plate by curving its arm may be made to serve also as the top strap instead of serving as the locking-plate, and an armless locking-plate I³ may be employed separately from the controlling-plate and on top thereof with the same effect as to securing the bolts, all as shown in Figs. 6 and 7.

When a new and properly-adjusted clipper is in its closed condition with its handle-buffers A² in contact with each other, as shown in Fig. 1, then the eccentric bushings F F' should be set or adjusted in their places with their highest points of eccentricity toward each other. The cutting edges C C' will then be in the position of nearest approach to each other and parallel. To maintain such parallelism when the edges of the cutters have been changed by wear in practical use and by the process of sharpening the same is the purpose of the eccentric bushings employed to adjust the bearings of the cutting-levers. Said bushings in the rear ends of the cutting-levers will, when adjustably turned about their pivots E E', move the ends of the levers outward, turning them on their fulcrums H H', and move the cutting edges C C' in a smaller degree nearer together. In this movement the levers are levers of the first kind, and the distances which their opposite ends move are in the same proportion that the lengths of the two arms of the levers bear to each other, and the smallest adjustment of the cutters is effected in the above manner. A greater degree of adjustment is obtained by means of the eccentric bushings on the fulcrum-bolts H H'. Their highest points of eccentricity in the new and

closed condition of the clipper above referred to are set outward and away from each other, as shown in Fig. 3. Turning them for purposes of adjustment causes the levers at those points to move toward each other, turning on the bolts E E' as fulcrums, thus changing the levers from levers of the first kind to levers of the third kind, so that a movement of the levers at H H' by adjustment of the eccentrics causes the cutting edges to approach each other to a greater extent, thus obtaining a greater degree of adjustment of those edges. The distances which the levers move at the points of adjustment H H' and at the extreme points of the cutting edges are to each other as the distances from the pivots E E' to the bolts H H' are to the distances from the pivots E E' to the said extreme ends of the cutting edges. In practice the different degrees of movement of the cutting edges obtained by the respective adjustments at E E' and H H' are in the ratio of about one to three. By the mode of adjustment described I am enabled to get a smaller adjustment by means of the eccentrics at E E' and a larger adjustment by means of the eccentrics at H H' and differential adjustments by changes at all said points, which is very desirable, as it often occurs that in the wear of the cutting edges in practical use it becomes necessary to adjust them more especially at the forward ends of the cutting edges and sometimes more particularly at the rear ends thereof, which I am enabled to do by changing the positions of the levers by suitable adjustment of all four of the eccentrics.

The utility, durability, and success of a tool of this character depend largely upon its capability of nice adjustment for the purposes specified; hence the importance of the improvements I have invented and which are herein described for the purpose of obtaining Letters Patent therefor.

I claim—

1. A bolt-clipper embodying the combination of a pair of handle-levers pivoted together; a pair of cutting-levers properly attached to, and operated by, the handle-levers; a pair of clamping-straps between which the cutting-levers are movably secured and their cutting edges thereby kept level with each other; a pair of bolts extending from strap to strap through the cutting-levers, whereby the straps are firmly secured in place; a pair of eccentric bushings fitted one upon each of said bolts and within the bolt-holes through the cutting-levers, and constructed and arranged to serve in the manner specified, to adjust said levers upon their fulcrums; and a controlling-plate securely attached to said fulcrum-bolts and having an arm extending back therefrom and connected with the movable fulcrum of the handle-levers, thereby holding the cutting edges of the jaws in proper opposition to each other; all substantially as and for the purposes specified.

2. A bolt-clipper embodying the combination of a pair of handle-levers pivoted together; a pair of cutting-levers pivoted to, and operated by, the handle-levers; a pair of eccentric bushings arranged one upon each of the pivots connecting the handles with the cutting-levers, and constructed to interlock with, and serve as, adjustable connections of the cutting-levers with the handles; a pair of clamping-straps between which the cutting-levers are movably secured and their cutting edges thereby kept level with each other; a pair of bolts which serve as fulcrums for the cutting-levers and by which the straps are connected, through holes in the cutting-levers, and firmly secured in place; and a controlling-plate securely attached to said fulcrum-bolts and extended back therefrom and connected with the movable fulcrum of the handle-levers for the purpose of holding the cutting edges of the jaws in proper opposition to each other, substantially as specified.

3. A bolt-clipper embodying the combination of a pair of handle-levers pivoted together; a pair of cutting-levers pivoted to, and operated by the handle-levers; a pair of straps between which the cutting-levers are held and moved, and by which their cutting edges are kept level with each other; a pair of bolts by which the straps are connected, through holes in the cutting-levers, and firmly held in place; a pair of eccentric bushings arranged on the pivots which connect the cutting-levers with the handle-levers, and constructed to adjustably interlock with surrounding recesses in said cutting-levers; a pair of eccentric bushings arranged on the strap-bolts which are also the fulcrums of the cutting-levers to adjustably interlock with surrounding recesses in said levers; and a controlling-plate securely attached to the strap-bolts and extended back therefrom and connected with the movable fulcrum of the handle-levers, thereby holding the cutting edges rigidly in opposition to each other, substantially as specified.

4. A bolt-clipper embodying the combination of a pair of handle-levers, pivoted together; a pair of cutting-levers pivoted to and operated by, the handle-levers; a pair of straps between which the cutting-levers are held and moved, and by which their cutting edges are held level with each other; a pair of bolts by which the straps are connected, through holes in the cutting-levers, and firmly held in place, said bolts having angular heads above the upper strap; a pair of eccentric bushings constructed to adjustably interlock with recesses in the cutting-levers, and arranged on the strap-bolts, which bolts serve also as the fulcrums for the cutting-levers; and a combined controlling and locking plate having holes with angular edges adapted to interlock with the angles of the bolt-heads when properly secured thereon, to lock the bolts against turning when the clipper is used, and having an arm extended back therefrom

and connected with the movable fulcrum of the handle-levers to hold the cutting edges rigidly in opposition to each other, all substantially as specified.

5 5. A bolt-clipper embodying the combination of a pair of handle-levers pivoted together; a pair of cutting-levers pivoted to, and operated by, the handle-levers; a pair of straps between which the cutting-levers are
10 held and moved, and by which their cutting edges are held level with each other, the upper strap being formed with a controlling-arm extending back and connecting with the movable fulcrum of the handle-levers; a pair of
15 bolts by which the straps are connected through holes in the cutting-levers, and firmly

held in place, said bolts also serving as fulcrums for the cutting-levers, and having angular heads above the upper strap; a pair of eccentric bushings constructed and arranged
20 on said fulcrum-bolts so as to adjustably interlock with the cutting-levers; and a locking-plate provided with holes, the edges of which are formed with reëntering angles adapted to interlock with the salient angles
25 of the bolt-heads when the plate is properly secured thereon, substantially as specified.

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Witnesses:

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JOHN A. HARRISON.