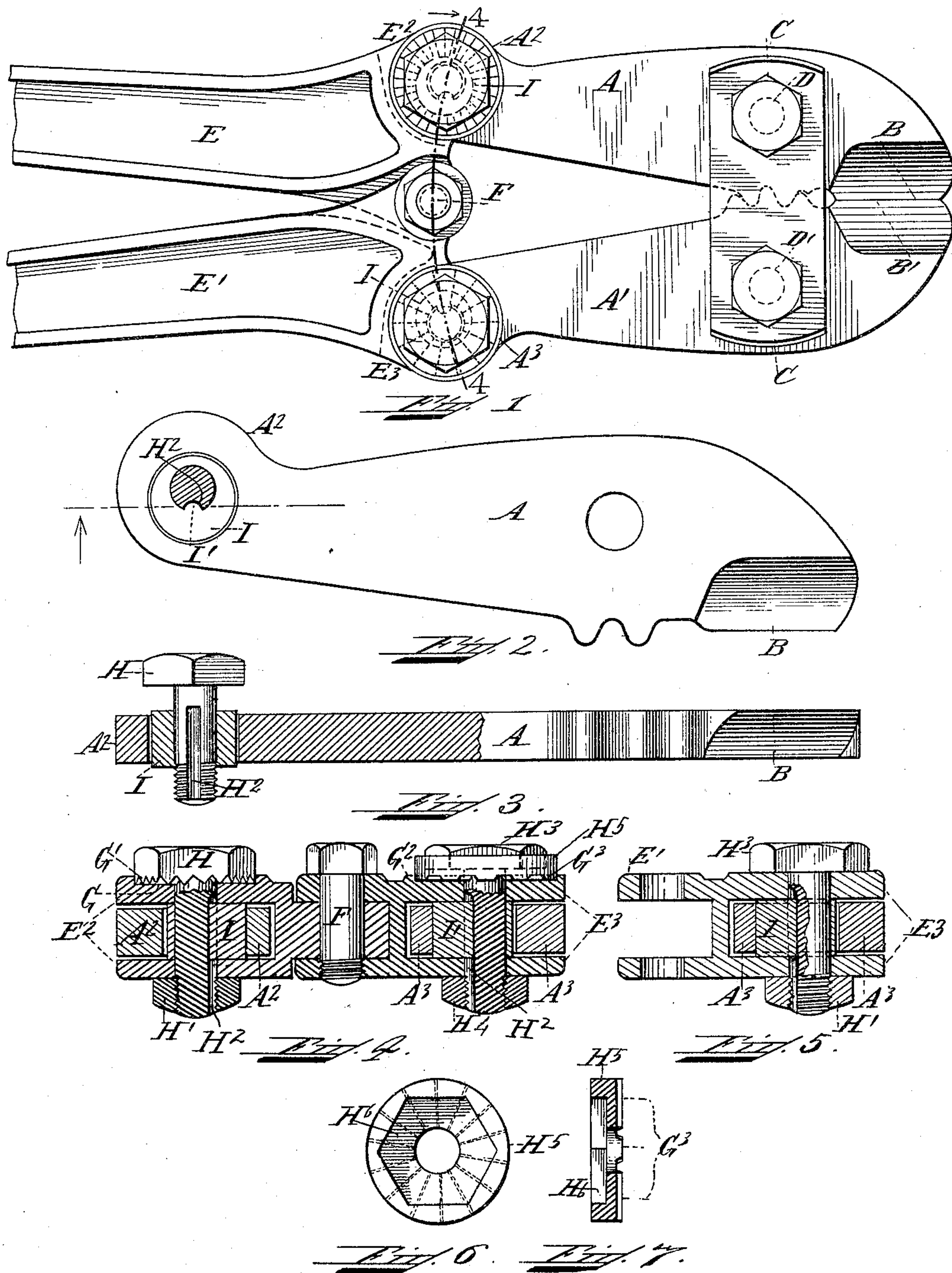


No. 793,394.

PATENTED JUNE 27, 1905.

H. K. PORTER.
BOLT CLIPPER.

APPLICATION FILED JAN. 30, 1904.



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UNITED STATES PATENT OFFICE.

HENRY K. PORTER, OF CHELSEA, MASSACHUSETTS.

BOLT-CLIPPER.

SPECIFICATION forming part of Letters Patent No. 793,394, dated June 27, 1905.

Application filed January 30, 1904. Serial No. 191,278.

To all whom it may concern:

Be it known that I, HENRY K. PORTER, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Bolt-Clippers, of which the following is a specification.

My invention relates to the class of compound-lever bolt-clippers of which I have made and patented a number of kinds, and which in this case consists in certain details of construction and novel combinations of parts whereby fine adjustments and useful results are obtained by improved means, and which construction is illustrated in the accompanying drawings, in which—

Figure 1 is a plan showing, reduced in size, the cutting-jaws and a portion of the handles with their pivotal connections and as embodying my invention. Fig. 2 is a plan of one of the jaws, of full size, (shown in Fig. 1,) with a cross-section of the bolt which unites it with the handle and the separate eccentric-disk secured thereon. Fig. 3 is an edge view of the same, partly in section, and showing the bolt in elevation. Fig. 4 is a cross-section on line 4, Fig. 1, and showing two forms of interlocking adjustment of the bolt and eccentric-disk. Fig. 5 is a similar section showing a plain bolt passed through a section of the handle and the eccentric-disk and jaw and arranged to clamp said parts between the head of the bolt and the nut, and thereby to secure the eccentric in adjustment in the jaw by friction produced by tightening the nut. Fig. 6 is a plan, and Fig. 7 a sectional edge view, of a toothed and recessed washer which may be employed under the head of the bolt, as shown on the right in Fig. 4.

This tool comprises a pair of jaws or cutter-levers A and A', formed with cutting edges B and B' and interlocking edge teeth, the jaws being bound together by straps C on opposite sides, secured thereto by pivotal bolts DD', all such as I have heretofore constructed. The actuated ends of the cutter-levers are connected with the handle-levers E and E'. These handles are centrally pivoted together by a bolt F in a manner also heretofore used by me. The adjustable connections by which the

jaw-levers A A' are connected with the handle-levers E E' at E² and E³ comprise in themselves and their combinations the principal novel features of my present invention. The branch E² of handle E is forked, as shown in Fig. 4, and a raised circular rim of teeth G is formed thereon, with which a corresponding circle of teeth G', formed on the under side of the hexagonal bolt-head H, engage and are securely interlocked therewith by the tightening of the nut H'. By these interlocking teeth the position of the eccentric I around the axis of the bolt H is fixed and regulated in the actuated end A² of the jaw, and such position is changed by slackening the nut far enough to raise the bolt-head teeth clear from the handle-teeth and then turning the bolt to any desired position and dropping its teeth into contact with the handle-teeth again and securing it, as before, by tightening the nut H'. Thus the relations of the cutting edges B B' are varied and adjusted as may be desired. The eccentric-disk I, as shown clearly in Fig. 2, may be secured by the groove in the body of the bolt H either by a key fitted partly in the eccentric and partly in the groove in a well-known manner or by an interior rib I' on the eccentric, fitted, as shown, in the groove H². A method of securing the parts together by friction is illustrated in Fig. 5, in which the eccentric I is made slightly thicker than the jaw A³ in which it plays and is therefore pinched firmly in the fork E³ of the handle-lever by the tightening of the nut H', and thereby frictionally held by clamping, no interlocking teeth being employed in this case.

From the foregoing it will be apparent, owing to the fact that the eccentrics I are formed separate from the bodies of the bolts H on which they are mounted and to which they are keyed, that the said eccentrics may be introduced into place through the ends of the forks of the handle-levers and the bolts then be slipped through the eccentrics from the sides of the handle-levers. This construction does not, therefore, require such large openings in the handle-levers as was necessary with the construction shown by my Patent No. 751,202, granted February 2, 1904, which shows the eccentrics integral with the bodies of the

bolts, so that relatively large openings in one of the forks of each handle-lever was necessary to permit the eccentric to be introduced into place through such fork and which relatively large openings weakened the forks more than was desirable. In the new construction the openings in the forks of the handle-levers are only of such size as is necessary to permit the passage therethrough of the bodies of the bolts.

A differential adjustment of the jaws is obtained by the introduction of an interlocking washer. (Shown in Figs. 4, 6, and 7.) This combination comprises bolt H^3 , circle of teeth G^2 on handle E^3 , and the washer H^5 , having a rim of teeth G^3 , which interlock with teeth G^2 when the washer is interposed between the bolt-head H^3 and the handle E^3 . The upper side of the washer has a socket or hexagonal cavity H^6 and a central hole through which the body of the bolt H^3 passes, while its hexagonal head sinks into and interlocks with the corresponding angular socket H^6 and is there secured by tightening the nut H^4 . By slackening the nut and raising the head of the bolt clear from the socket H^6 and high enough to permit the raising of the washer, so as to disengage its teeth from the underlying teeth on handle E^3 , an adjustment may be made of the relations of the connected parts as follows: Turning the hexagonal head about the axis of the bolt to the extent of one of its sides, its shortest throw, carries the eccentric I around one-sixth of a revolution, thus making effective one-third of its eccentricity in moving the

cutter-lever. Then by dropping and interlocking the head with its hexagonal seat H^6 in the toothed washer H^5 and turning the two together to the extent of one tooth, its shortest throw, it will move the eccentric one-fourteenth of a revolution, thus making effective one-seventh of its eccentricity in moving the cutter-lever. If the first movement of the bolt, as above described, is made in a forward direction and the second, together with the washer, is made in an opposite or backward direction, the resulting adjustment of the eccentric will be an advance equal to the difference between one-sixth and one-fourteenth of a revolution, with a corresponding effectiveness of its eccentricity. Thus differential adjustments of the eccentric may be effected to any practically required degree of fineness for the purpose described.

I claim—

In a bolt-clipper, the combination of a pair of handle-levers, having teeth around their pivotal bolts; a pair of cutter-levers; a pair of pivotal bolts with angular heads; a pair of separable eccentrics attached to the bolts; a pair of adjustable washers provided on one side with teeth to interlock with the teeth on the handles, and on the opposite side with an angular socket adapted to serve as a seat for, and to interlock with, the angular bolt-head; all as and for the purposes specified.

HENRY K. PORTER.

Witnesses:

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