(No Model.)

F. H. RICHARDS.

PLIERS.

No. 343,547. Patented June 8, 1886.

Fig. 1

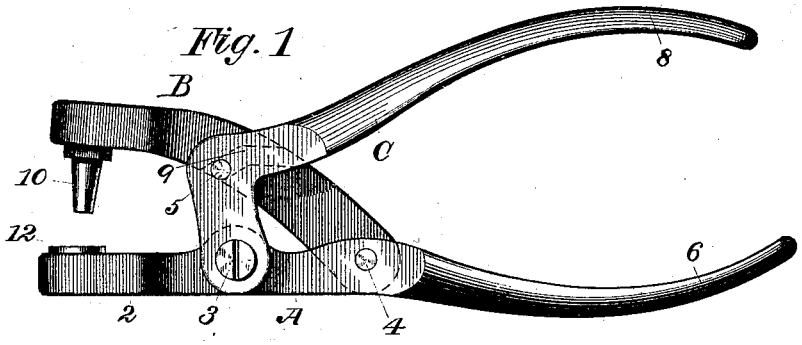


Fig. 2

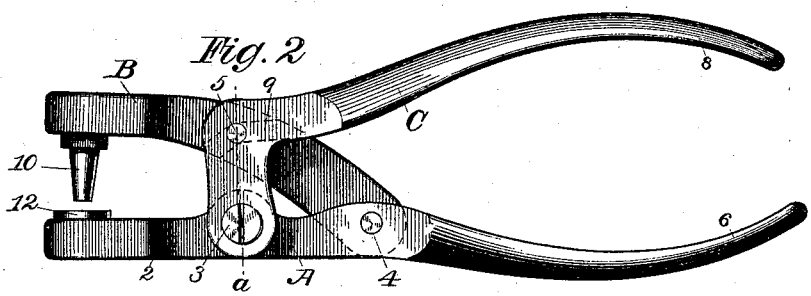


Fig. 3

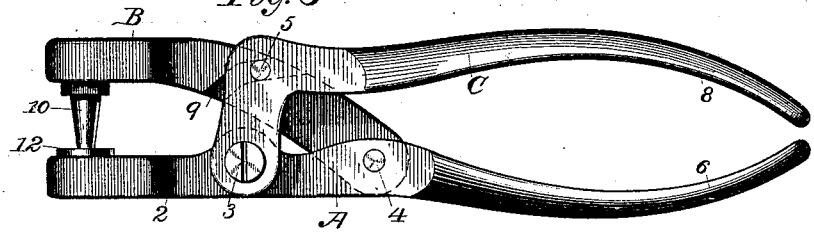


Fig. 4

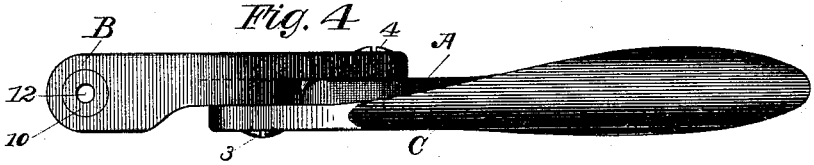
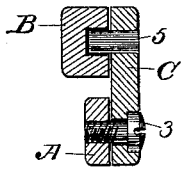


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PLIERS.

SPECIFICATION forming part of Letters Patent No. 343,547, dated June 8, 1886.

Application filed October 30, 1885. Serial No. 181,383. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden, State of Massachusetts, have invented certain new and useful Improvements in Pliers, of which the following is a specification.

This invention relates to that class of pliers which, when provided with suitable dies or tools, are used for belt-punches and eyelet and button fastener setting instruments.

The principal object of the invention is to furnish an implement of the aforesaid class in which the jaws shall have as they approach each other a decreasing movement relative to the movement of the handles, thereby securing a greater power toward the end than at the beginning of their closing movement.

To this end the invention consists in the combinations hereinafter described and claimed.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of an implement embodying my invention, the jaws of the implement being in their open position. Fig. 2 is a similar view showing the relative positions of the parts when the jaws are partly closed. Fig. 3 is a similar view showing those positions when the jaws are closed. Fig. 4 is a top view of the implement. Fig. 5 is a cross-sectional view in line *a a*, Fig. 2.

Similar characters designate like parts in all the figures.

My improved pliers comprise the member A, composed of a fixed jaw, 2, and handle 6, together forming one side of the implement, the member B, which is a movable jaw, having a cam-groove, and the member C, which is a lever, having a pin working in the cam-groove of member B, and having a handle, 8, corresponding to handle 6. Members B and C are each pivoted on member A at 4 and 3, respectively. A pin, 5, fixed in lever C, fits in the cam-groove. (Shown by dotted lines in Figs. 1, 2, and 3, and designated by 9.) Said groove is so shaped as to move part B more rapidly relative to the movement of handle 8 at the beginning than toward the end of its closing stroke. This action will be apparent upon comparing with each other the first three figures of drawings. In Fig. 1 the handles and jaws are both widest open. In Fig. 2 the handles have been brought toward each other about one-third of their stroke, and this, owing to the shape of the cam, has about two-thirds closed the jaws. On now continuing the closing of the handles the jaws have a retarded motion, closing more slowly, but with correspondingly greater power, so that both the jaws and the handles reach their closed position together, as in Fig. 3. On opening the handles, which may be done by a spring (not shown) in the ordinary way, the relative movements of the jaws and handles will, of course, be reversed.

It should be understood that the cam-groove may be formed in member C and the roller or pin fixed to member B without departing from my invention, and I intend to cover by my claims such modified construction. It will also be understood the instrument may be specially proportioned and arranged in various ways to adapt it for the different purposes for which it is to be used. In the present instance I have shown it as used for a belt-punch, 10 being the punch, and 12 the copper plate, on which the punch acts.

It is not the sole object of my invention to furnish pliers in which the jaws shall have the retarded closing movement above described. It also aims to furnish a tool of the class specified, in which the jaws shall move through a given distance with less angular movement than common to ordinary implements of the same size. This object I accomplish by pivoting together the members A and B farther back than usual toward the handles and providing means for operating them from a point forward (toward the left hand in Fig. 1) of said pivot. It is obvious this construction will be effective for the purpose whether or not the jaws have a retarded movement.

Having thus described my invention, I claim—

1. The improved pliers herein described, comprising the member A, movable jaw B, pivoted to member A, lever C, pivoted to member A, forward of the pivot of jaw B, and

means, substantially as described, for operating said jaw from said lever, substantially as set forth.

2. The combination, in pliers, of members A, B, and C, pivoted together, substantially as described, a cam-groove formed in one of the members, B or C, and a pin fixed to the other of said members and working in said cam-groove, which cam is shaped as described to impart a retarded movement to member B, substantially as set forth.

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