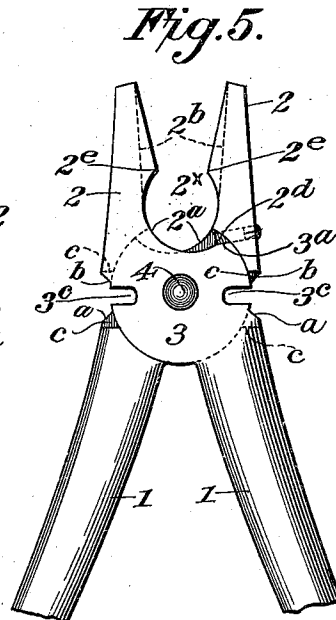
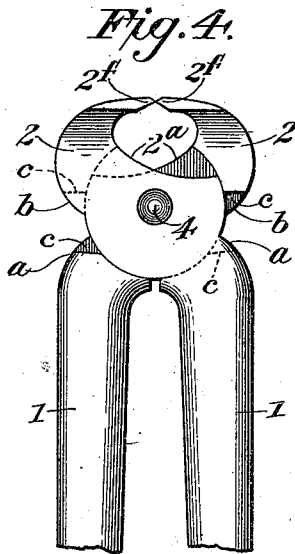
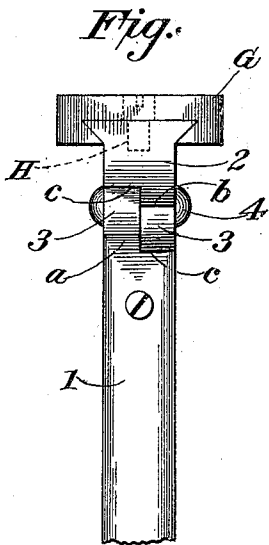
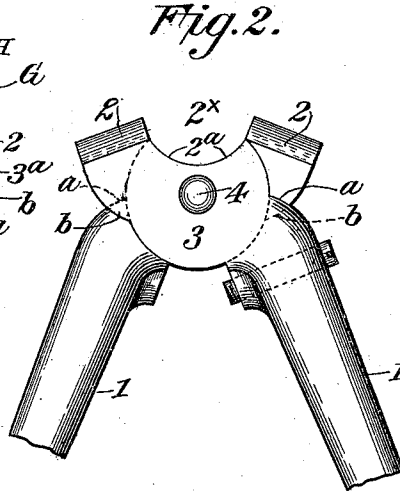
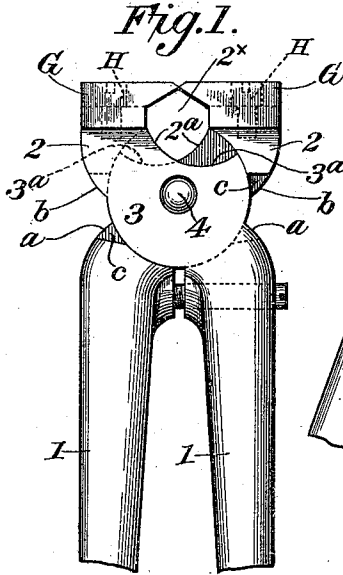


P. BROADBOOKS.
PLIERS AND WIRE CUTTER.
APPLICATION FILED OCT. 9, 1909.

979,925.

Patented Dec. 27, 1910.

2 SHEETS-SHEET 1.



Inventor:

Peter Broadbooks

Witnesses

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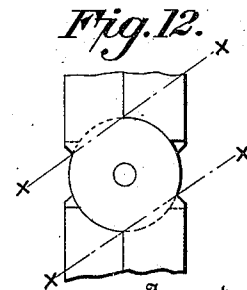
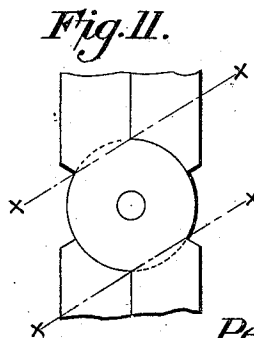
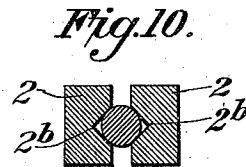
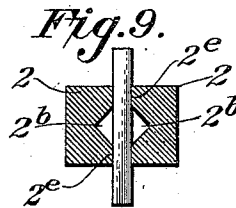
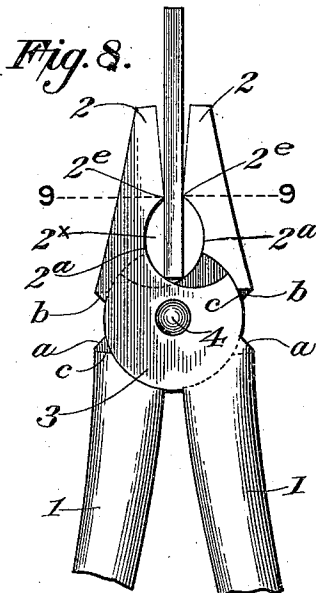
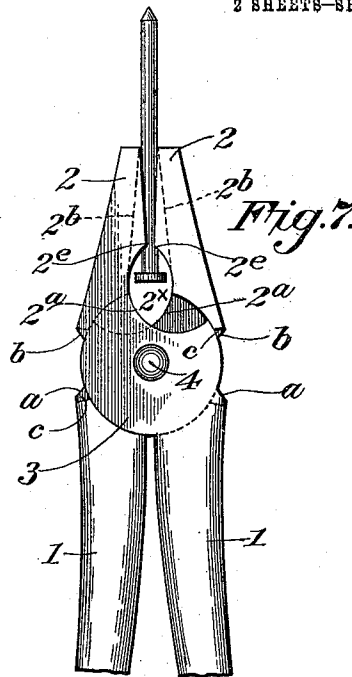
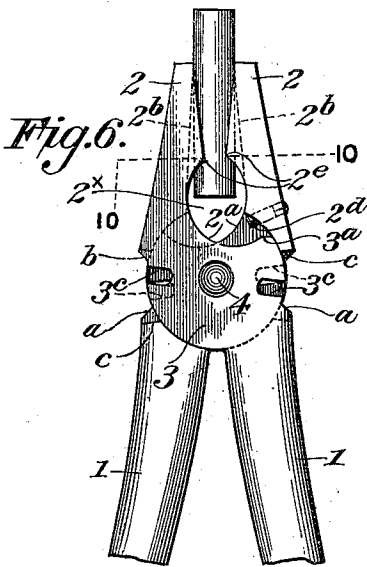
By Alexander F. Sowell
Attorneys

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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

PETER BROADBOOKS, OF BATAVIA, NEW YORK.

PLIERS AND WIRE-CUTTER.

979,925.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed October 9, 1909. Serial No. 521,940.

To all whom it may concern:

Be it known that I, PETER BROADBOOKS, of Batavia, in the county of Genesee and State of New York, have invented certain new and useful Improvements in Pliers and Wire-Cutters; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in pliers and wire cutters and its objects are to reduce the size and weight of such pliers; to increase their strength and power; to bring the biting points of the pliers nearer to the fulcrum; and to increase the general capacity and adaptability for grasping and holding objects; a given size of pliers in this invention, with a given extent of opening, being capable of holding objects of various diameters and sizes and of holding much larger objects than is possible with pliers of ordinary construction.

Another object is to provide the jaws of such pliers with adjustable cutting plates and a stop to gage the alinement of the shearing jaws when the pliers are constructed for wire cutting; and another object is to provide the jaws and the handles of the pliers with zigzag shoulders at their junction with the pivotal portion whereby stock is taken from where it is not needed and placed where the greatest strength is required in such tools.

The invention will be clearly understood from the following description in connection with the accompanying drawings in which—

Figure 1 shows the pliers closed with adjustable cutting plates secured to the jaws. Fig. 2 shows the tool open with the adjustable cutting plates removed. Fig. 3 is an edge view of the pliers showing the zigzag shoulders of the handles and the jaws with the adjustable cutting plates in position. Fig. 4 shows the pliers with integral cutting jaws. Fig. 5 shows a modification of the pliers open with the gage in contact with the stop and the shearing edges of the wire cutting notches in alinement. Fig. 6 shows the pliers holding cylindrical objects of large diameter. Fig. 7 shows the pliers

grasping a nail. Fig. 8 shows them holding a flat piece of metal. Fig. 9 is a section on line 9—9, Fig. 8. Fig. 10 is a section on line 10—10, Fig. 6. Fig. 11 shows an ordinary joint. Fig. 12, the same kind of joint is shown with a smaller radius of circle with my improved zigzag shoulder joint for illustration.

The pliers comprise two complementary members each of which has a handle 1, and a jaw 2; the jaw and handle being integral with the pivotal portions 3, which are halved and concentrically fitted together and are approximately circular in plan. The pivotal portions 3 are recessed on their inner faces and fitted together as shown so that the jaws and handles lie in the same plane and are directly opposed. The parts 3 are pivotally connected by a pivot or bolt 4. In the base and inner face of each jaw, adjacent the pivot, is formed a recess 2^a which extends into the adjacent portion of the part 3 as shown at 3^a so that by reason of said recess the opening between the jaws is practically extended into the circular portions toward the pivot 4, by the prolongations 3^a of the recesses 2^a. These recesses form an opening 2^x between the jaws when closed, and serve a very useful purpose hereinafter explained.

The shoulders of the jaws and the handles are formed zigzag at their junction with the pivotal portion so that the body of the shoulders *a* of the handle 1 can pass by and beyond the body of the shoulder *b* of the jaw 2, as shown in Fig. 2. To admit of this passage, stock is cut away from the recessed portion of said shoulders, as shown at *c*, Fig. 1; thus it will be seen stock is taken from where it is not needed and placed right where the greatest strength is required; this is a vital point in such pliers; to illustrate this in Fig. 11, I show an ordinary joint of such pliers, while in Fig. 12 the same is shown having a smaller radius because formed with my new zigzag shoulders, both the joints open the same distance, but the jaws and the handles of the pliers with joint as in Fig. 12 are as strong at their junction with the pivotal portion, measuring on line *x x*, as are the levers and jaws of the pliers having a joint as in Fig. 11; thus

such zigzag shoulders enable the size and weight of such pliers to be reduced and at same time increase their strength and power, because material to be held or cut in the pliers may be placed nearer to the fulcrum. It is obvious that the less weight contained in such pliers the more desirable they are and they are less expensive to produce. Furthermore each of the jaws 2 is preferably provided with an overlapping slidable dovetailed grooved cutter plate G which is adjustably secured to the head by means of a pivot or set screw H. The jaws 2 as shown in Figs. 6 and 7 may also be formed like ordinary plier jaws but have longitudinal grooves 2^b, which grooves are V-shaped in cross section, and gradually increase in size from the outer ends of the jaws toward the pivot 4, and thus such jaws are also adapted to bite an object inserted between them at four points, as indicated in Fig. 10, thus obtaining a very firm grasp thereon.

The opposed pivotal portions 3 are preferably provided with wire cutting notches 3^c in their opposite edges, and the shearing edges of such notches will be brought into exact alinement if the handles are opened until the part 3^a on one member abuts against a stop 2^a on the opposed member, see Figs. 5 and 6; this stop 2^a is exactly located by tapping a set screw in the side of the jaw with its inner end projecting into the path of the part 3^a of the opposite pivotal portion; such screw may be retracted to permit the jaws to be opened to their full extent.

The junction of the walls of recesses 2^a with the inner faces of the jaws 2 form biting points 2^e which are adapted to firmly hold open a piece of flat metal or other object of greater width than the groove or jaws and which can be inserted therebetween as indicated in Fig. 9. In this instance the inner end of the object projects into the recess 2^x and contacts with the walls of the extensions 3^a of the recesses, which contact affords a bearing for the inner end of the object grasped by the pliers. Thus said object will be firmly held by the grip thereon at the points 2^e and by its bearing contact with the walls of the opening 2^x.

As shown in Fig. 4 instead of forming the jaws with grooves 2^b, I form cutting edges 2^f at the points 2^e and remove the projecting portions of the jaw. This forms good nippers and wire cutting pliers.

My improved pliers will hold larger work than the ordinary pliers of like size are capable of doing; and my pliers will hold different sizes of wire with greater impinging force than is possessed by the ordinary pliers on account of the peculiar V-shape

grooves in the jaws; and as cutting pliers they are powerful and strong as the recesses will permit of making the complemental members with a larger pivotal portion.

The walls of recesses 2^a will prevent ends of wire cut off from wedging or lodging back of and between the jaws and pivotal points, as frequently happens with other pliers, because the end of the wire bearing against the inclined walls of the recesses will slip as the jaws approach each other. When grasping objects such as nails my improved pliers can be slipped over the head of the nail and grip the body thereof, as indicated in Fig. 7, while the head is accommodated in the opening 2^x.

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

1. Pliers consisting of two similar complemental members each comprising a jaw, a handle, and an intermediate approximately circular pivotal portion, the pivotal portions being halved and fitted together at the joints so that the jaws and the handles lie flush, the jaws having an enlarged opening between their inner faces at their bases, formed by recessing the inner face of the base of each jaw and the adjacent pivotal portion of the member below the jaw in a uniform curve, the lower end of the recess being below the top of the pivotal portion, substantially as described.

2. Pliers consisting of two complemental members each comprising a jaw, a handle, and an intermediate circular pivotal portion, the pivotal portions being halved and fitted together as described, the jaws and the handles being recessed at their junction with the pivotal portion forming zig-zag shoulders which pass by one another to increase the capacity of the jaws as and for the purpose specified.

3. Pliers consisting of two complemental members each comprising a jaw, a handle, and an intermediate circular pivotal portion, the pivotal portions being halved and fitted together as described, the jaws being recessed on their inner faces near the pivotal portion, the angles at the outer sides of the recesses forming biting points, and the shoulders of the jaws and the handles being recessed at their junction with the pivotal portion forming zig-zag shoulders which pass by one another to increase the capacity of the jaws as and for the purpose specified.

4. A pair of pliers consisting of two similar complemental members each comprising a jaw, a handle and an intermediate pivotal portion, said portions being halved and fitted together, the jaws having an enlarged opening between their inner faces at their

bases formed by recessing the inner face of
each jaw near its base and the pivotal por-
tion adjacent thereto on a uniform curve,
the lower end of the recess being below the
5 top of the pivotal portion, and each jaw
being also provided with a longitudinal V-
shaped groove on its inner face said groove
increasing in size from the end of the jaw
toward the pivot thereof and extending

from the recess to the outer extremity of 10
the jaw.

In testimony that I claim the foregoing
as my own, I affix my signature in presence
of two witnesses.

PETER BROADBOOKS.

Witnesses:

FRANK E. LAWSON.

C. B. PIXLEY.