

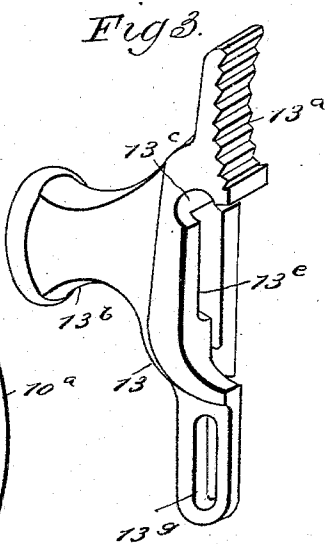
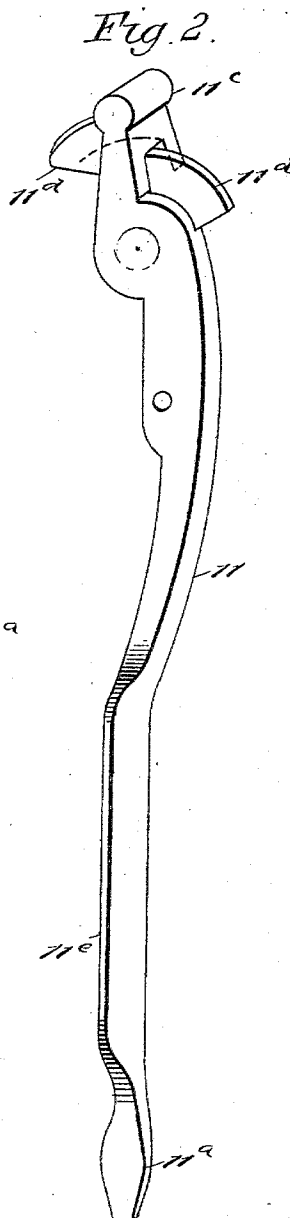
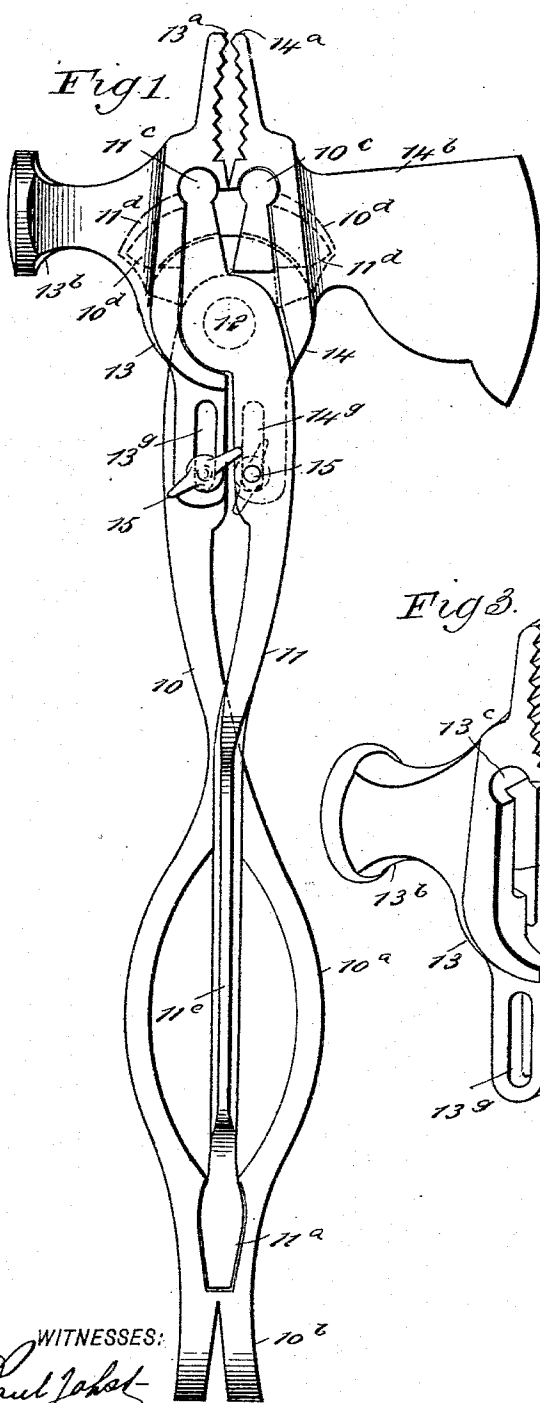
(No Model.)

2 Sheets—Sheet 1.

H. C. CALDWELL.
COMBINATION TOOL.

No. 548,516.

Patented Oct. 22, 1895.



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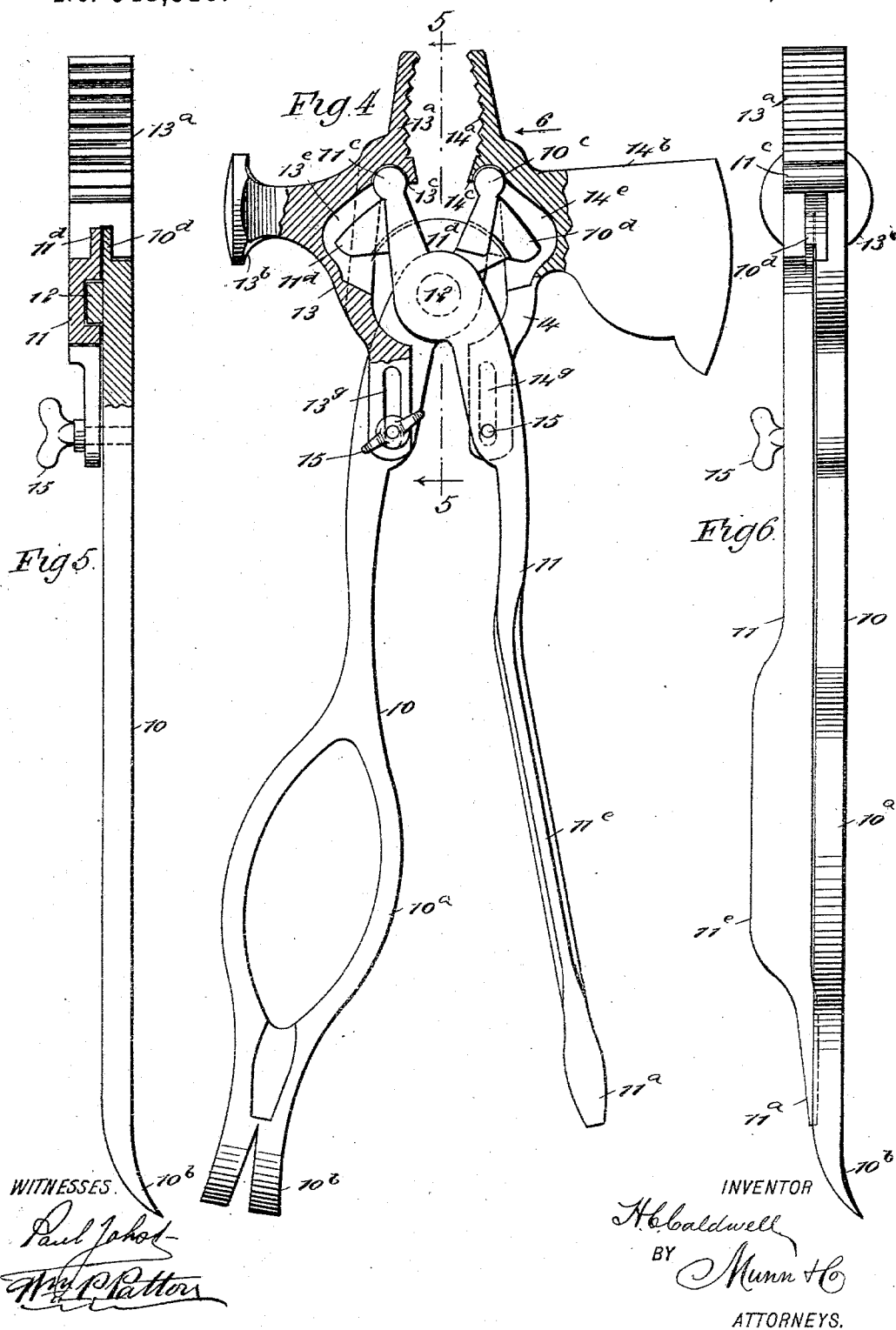
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

HENRY C. CALDWELL, OF LANCASTER, NEW YORK.

COMBINATION-TOOL.

SPECIFICATION forming part of Letters Patent No. 548,516, dated October 22, 1895.

Application filed January 23, 1895. Serial No. 535,869. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. CALDWELL, of Lancaster, in the county of Erie and State of New York, have invented a new and Improved Combination-Tool, of which the following is a full, clear, and exact description.

This invention relates to an improved combination of implements in compact and convenient form, and has for its object to provide a multiplicate combination-tool, which has different functions, and that by the novel construction and assemblage affords a combined implement that is efficient for its several uses, is neat in design, takes up but little room, and that may be produced at a moderate cost.

The invention consists in the construction and combination of parts, as is hereinafter described, and indicated in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side view of the improved combination implement, showing its parts in closed adjustment. Fig. 2 is a detached perspective view of one main limb of the device. Fig. 3 is a detached perspective view of a portion of the improved combination-tool that embodies a hammer-poll and a tongs-jaw, together with means for joining said portion to other parts of the multiplicate device. Fig. 4 is a side view of the combination-tool, partly broken away to expose normally-concealed working parts. Fig. 5 is a view of the improvement, partly in section, on the line 5 5 in Fig. 4 and looking in the direction of the arrows in said figure; and Fig. 6 is an edge view of the composite tool, one jaw-piece of the device being removed to expose parts concealed thereby, the normal location of said parts being indicated by the arrow 6 in Fig. 4.

The multiplicate tool, as shown in the drawings, comprises a pair of plier-jaws which, respectively, are provided with a hammer-poll and a hatchet-blade, the said jaws having short extensions which are longitudinally slotted and loosely secured to two handle-limbs. The latter, having a lapped engagement with each other, are pivoted where they cross, and their shorter forward members are

knuckle-jointed at their forward ends with the plier-jaw pieces, so as to adapt the handle-limbs to actuate the jaw-pieces nearly in parallel planes when said limbs are rocked from and toward each other on their pivot connections.

The handle-limbs 10 11 are preferably shaped as shown, and, as most clearly represented in Figs. 4 and 5, the limb 10 has a swell produced at 10^a near its free end, said enlargement being apertured to reduce weight and also to afford a convenient grip portion on the limb for the grasp of the operator while using the improvement. The enlargement 10^a is produced edgewise on the limb 10, which is otherwise made flat in the body, except the end portion 10^b, that is laterally curved and forked to provide a tack or small-nail lifting claw of ordinary form.

On the handle-limb 11 at its end which is extended in the same direction as the claw end of the limb 10 a screwdriver-bit 11^a is produced, and at points about equally distant from the opposite extremities of the limbs 10 11 said limbs are lapped together and pivoted by the insertion of the pintle-stud 12, which projects from the limb 10 into a socket in the other limb, as clearly shown in Fig. 5.

The plier-jaws 13 14 have similar grip portions 13^a 14^a, projected at corresponding ends, of a suitable length for effective service, and on their inner or opposite surfaces serrations are formed. The gripping-faces are made oppositely concave in direction of their length to adapt them for holding a pipe or bolt body, but the serrated jaw portions can also be made level on their toothed faces, if preferred. The plier-jaw piece 13 has the hammer-poll 13^b projected laterally, as shown in Figs. 1, 3, and 4, the hatchet-blade 14^b in a like manner extending from the jaw-piece 14 at a point opposite the hammer-poll when all parts of the composite implement are assembled in completed form.

On the forward extremities of the handle-limbs 10 11, at an equal distance from the pivot-stud 12, the similar transverse cylindric head-blocks 10^c 11^c are produced, which said heads are caused to loosely interlock with the mating cylindric concavities 13^c 14^c, into which they may be slid by application of the

head-blocks to the concavities as the pivot-stud 12 is entered within the socket that receives it.

The concavities 13^a 14^a are formed in the jaw-pieces 13 14 below and near to the grip portions 13^a 14^a, and it will be seen that when the limbs and jaw-pieces are loosely connected, as has been described—that is to say, by laterally sliding the stud 12 into its socket and the head-blocks into the mating concavities—a divergent movement of the longer portions of the handle-limbs will effect a rocking movement of the jaw-pieces and remove the gripping-jaws 13^a 14^a from each other, a reverse movement of said limbs serving to bring the gripping portions toward each other, the jaw-pieces and limbs having a knuckle-jointed connection.

On the knuckle-joint limbs of the handle-pieces 10 11, as for convenience the portions of the same which project in advance of the pivot connection 12 are termed, similar curved guard-flanges 10^d 11^d are formed, these flanges each extending at opposite sides of the joint-limb they are integral with and in effect are peripherally arched portions, having their radial center in the axis of the pivot-stud 12.

The portions of each guard-flange 10^d 11^d that are located on the sides of the knuckle-joint limbs which are nearest to each other when the handle-limbs are jointed together are preferably made of reduced thickness, as compared with the flange portions that project from the outer sides of the knuckle-joint limbs, and a notch or open slot is formed in the base of each knuckle-joint limb to admit the guard-flange that projects from the opposite knuckle-joint limb, so that these guard-flange portions will have a loose lateral contact when parts of the device are assembled and also removably interlock with opposite knuckle-joint limbs.

There is a recess formed in each jaw-piece 13 14 nearly opposite the hammer-poll and hatchet-blade formations thereon or on the inner sides of said jaw-pieces, which recesses 13^e 14^e are provided for reception of the outwardly-projecting portions of the guard-flanges 10^d 11^d, which loosely fit therein. (See Fig. 4.) The jaw-pieces 13 14 are extended beyond the recesses 13^e 14^e or oppositely from the gripping-jaws 13^a 14^a of a suitable and preferably equal length, these extensions being adapted to lap over the handle-limbs near their pivot-joint, as indicated in Figs. 1, 4, and 5.

Each extension of the jaw-pieces 13 14 is slotted lengthwise near its end, and a set-screw 15 is provided for each jaw-extension, the said screw-bolts, which preferably are formed with winged heads, in service are inserted through the slots 13^f 14^f and have a threaded engagement of their screw-cut bodies with tapped holes made at correct points in the handle-limbs, so that a vibration of the latter on the pivot-stud 12 will cause the jaw-

pieces 13 14 to move toward or from each other substantially in parallel planes.

It will be seen that the provision of the guard-flanges 10^d 11^d and their loose interlocking connection with the jaw-pieces 13 14, as explained, and also with the knuckle-joint limbs serves to greatly strengthen the pivot-joint of the limbs 10 11 and prevents improper lateral looseness when the gripping-jaws are spread apart in use.

The serrated jaws may be set to serve as a wrench by tightening the set-screw bolts 15 after said jaws are spread apart a correct distance, and it is apparent that the coaction of the handle-limbs and gripping-jaw pieces will afford an efficient hand-vise also, the use of the implement as pipe-tongs being evidently effective.

When it is desired to use the handle-limb 11 as a screwdriver, said limb may be readily disconnected if the set-screw bolts 15 are removed and the handle-limbs are sufficiently diverged to permit their lateral sliding movement for disconnection of the same, the limb 11 then appearing as shown in Fig. 2. For effective use as a hammer, hatchet, or tack-lifter the composite implement is adjusted as shown in Fig. 1, and if the set-screw bolts 15 are tightly adjusted will render the complete device substantial, neat in form, and very convenient in service for either purpose mentioned.

There will be a swell 11^e seen on the handle-limb 11 in Figs. 2 and 6, and it will also be noticed in Figs. 1 and 6 that the screwdriver-bit 11^a is slightly embedded in the limb 10 when the parts are adjusted to completely fold said limbs. The swell 11^e is of service as a fulcrum when the implement is employed as a tack or small nail lifter, the swell adapting the tool for a greater lifting range in an obvious manner.

It is claimed for this composite tool that it provides in compact form, ready for convenient and instant use, several implements that are frequently required by housekeepers and others, and also that the combined implements have such correlation that all are needed to perfect the novel multiplicate tool.

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

1. In a tool, the combination of handles pivoted together and provided with extensions beyond the pivot, said extensions having enlarged cylindrical ends and each provided with a guard flange on its outer side, jaws provided with recesses to receive the guard flanges, cylindrical concavities in the upper part of the recesses in which concavities the enlarged cylindrical ends of the handles loosely fit, and slots in their lower ends, and screws passing through the slots of the jaws into the handles, substantially as described.

2. In a tool, the combination of handles

pivoted together and provided with extensions beyond the pivot, said extensions having enlarged cylindrical ends and each provided with a slot and guard flanges projecting from its inner side, jaws recessed and provided with cylindrical concavities in which the enlarged cylindrical ends of the handles loosely fit, and with slots in their lower ends, and screws passing through the slots of the jaws into the handles, substantially as described.

3. In a tool, the combination of handles pivoted together and provided with extensions beyond the pivot, said extensions having enlarged cylindrical ends and each provided with a slot and a flange projecting from each side, jaws recessed and provided with cylindrical concavities in which the enlarged cylindrical ends of the handles loosely fit and with slots in their lower ends, and screws passing through the slots of the jaws into the handles, substantially as described.

4. A combination tool, comprising handles pivoted together and provided with extensions beyond the pivot, said extensions having enlarged cylindrical ends and each provided with a slot and a flange projecting from

each side, a hammer poll recessed and provided with a cylindrical concavity in the upper part of the recess, a jaw projecting from its upper face, and a slot in its lower end, a hatchet blade recessed and provided with a cylindrical concavity in the upper part of the recess, a jaw projecting from its upper face and a slot in its lower end, and screws passing through the slots of the jaws into the handles, substantially as described.

5. A combination tool, comprising handles pivoted together near one end, the end of one handle being formed into a screwdriver bit and the other into a claw, the handle with a claw being enlarged near its end and formed with a recess to receive the screwdriver bit, and a hammer poll and hatchet blade, each provided with a jaw on its upper surface and having a knuckle joint connection with one handle on one side of the pivot and a screw and slot connection with the other handle on the opposite side of the pivot, substantially as described.

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