(No Model.)

J. G. YOUNG.

DRAW KNIFE.

No. 542,721. Patented July 16, 1895.

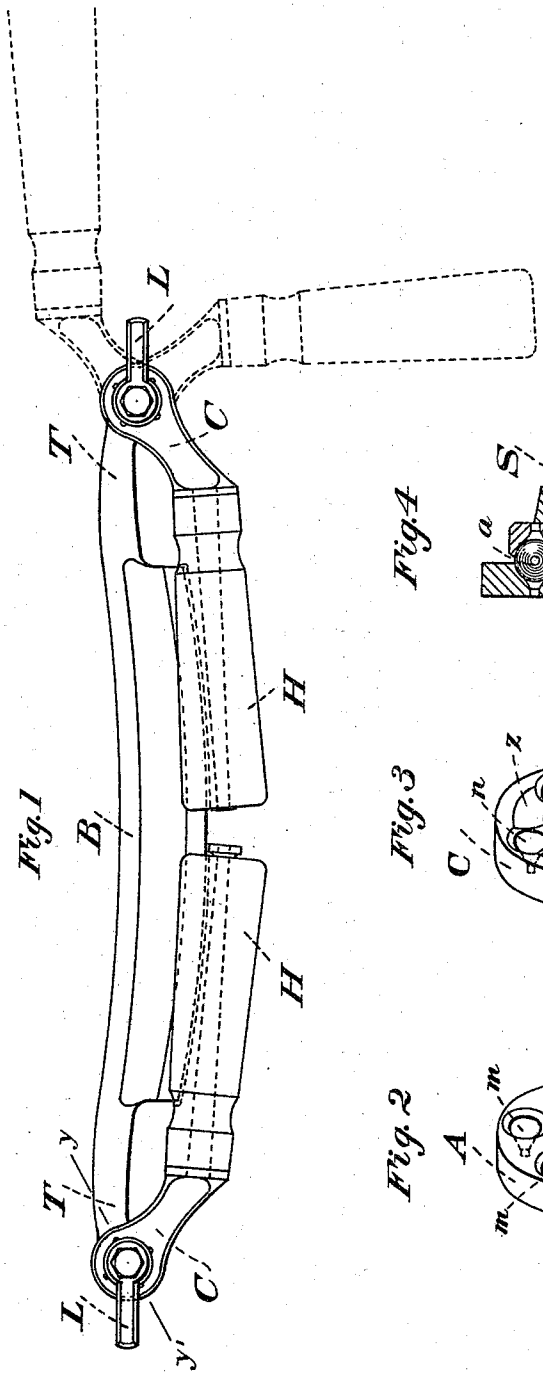

Fig. 1

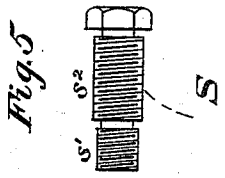

Fig. 5

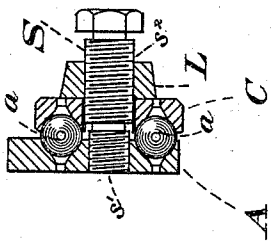

Fig. 4

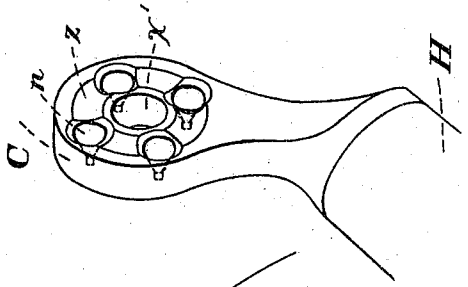

Fig. 3

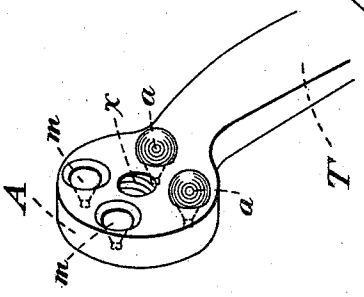

Fig. 2

Witnesses.
Eleanor F. Snell
Grace M. Shay

Inventor
Archibald G. Young

UNITED STATES PATENT OFFICE.

JOHN G. YOUNG, OF HYDE PARK, MASSACHUSETTS.

DRAW-KNIFE.

SPECIFICATION forming part of Letters Patent No. 542,721, dated July 16, 1895.

Application filed January 12, 1895. Serial No. 534,633. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. YOUNG, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Draw-Knives, of which the following is a specification.

By my invention I construct a draw-knife of the folding-handle class, which combines simplicity and cheapness of construction with great strength.

It has long been the desire of manufacturers of carpenters' tools to make a folding draw-knife which shall be readily opened and fixed in any desired position and be firmly locked when the handles are in place. Many draw-knives have been made which are readily manipulated so far as changing the position of the handles is concerned, but their construction is usually attended by multiplication of parts and consequent reduction in size and strength of the parts, and the locking of the handles in position is not sufficiently rigid to constitute a perfect draw-knife.

The object, therefore, of my invention is the construction of a folding draw-knife which shall be readily manipulated and which, when the handles are locked, shall be as stiff and strong as if the handle-shank were a continuation of and integral with the knife-tang. I accomplish this object by the following novel construction and arrangement of parts: I pivot the knife-handles on the tang ends to turn in the plane of draft of the knife, and by means of a thumb-nut on the pivot, which is threaded for the purpose, enable the user to withdraw the handle from the tang or press it toward the tang, as desired. The adjacent surfaces of the tang and handle end overlap each other in a plane substantially coincident with the plane of draft, and between these surfaces in this plane I locate the locking devices which operate whenever the handle end and tang are pressed together. Further, in the construction of what I believe to be the best embodiment of my invention, I arrange the fastening devices in a circle symmetrically about the pivot. This relieves all strain from the pivot-bolt and distributes the locking-surface in such a manner that all torsional or direct stress is resisted with the best possible economy and the least demand on the strength of any individual part.

In the drawings which form part of this my specification I have shown what I believe to be the best and most economical embodiment of my invention.

Figure 1 shows my improved draw-knife with parts assembled. Fig. 2 is a perspective view of one of the tang ends, showing the mode of arranging the pivot-hole and fastenings. Fig. 3 shows a similar view of the handle end. Fig. 4 is a section through tang and handle on the line $y\,y'$, Fig. 1, and Fig. 5 the pivot-bolt.

The tang ends of the blade are enlarged to form flat cylindrical terminations with one of the flat sides in the plane of draft of the knife. This plane I find to be one which bisects the solid angle between the back of the blade and the bevel of the edge. The plane of draft may of course be variously located between fair limits, according to the needs or notions of the carpenter or toolmaker. The handle ends are metal, set at an angle with the wooden grip of the handle to give sufficient spread to the handles when open and also to set the handles properly over the blade when closed. These handle ends terminate in flat cylindrical heads of about the same diameter as the tang ends. Through the centers of the flat sides of the cylindrical termini of tangs and handle ends are bored holes for the pivot-bolts.

Referring now to the drawings, in which like letters are always used to denote like parts, the tangs T of blade B are flattened into cylindrical heads A, Fig. 2, and the handles H terminate in flat cylindrical heads C, Fig. 3. In the center of A is bored a hole x, Fig. 2, tapped to receive a screw-bolt S, Figs. 4 and 5, and in the center of C, Fig. 3, is bored a smooth hole for the reception of the same bolt S. This bolt S, which is the pivot joining tang and handle, is made with two sections of varying diameter. (See Fig. 5.) Section s', the smaller, screws into the tapped hole x in the tang-head A. Section s^2, the larger, is also threaded, but slides in hole x' in handle end C. By screwing bolt S into hole x until the shoulder between s' and s^2 bears on the flat surface of tank-head A the screw-bolt S is firmly set. A thumb-nut L, Fig. 1, (shown in

section in Fig. 4,) fits the large section s^2 of screw S. Handle end C slides on s^2 between nut L and tang-head A. The head of the bolt S keeps nut L in place on the bolt. On a circle about the axis of bolt S (or holes x and x') as a center I bore four holes, preferably conical, in tang-head A. These holes are shown at m. Similar holes n n are bored in the handle end C. The holes m and n lie in the surfaces of handle end and tang-head, which face each other when the parts are assembled, Fig. 4. Connecting the tops of holes n in C is a shallow annular groove z. These holes are equally and evenly spaced in the surfaces of tang-head and handle end, respectively, so that when the two parts face each other, with screw S in place, the holes coincide in any one of four different positions of handle as the handle is turned on screw S. Between the handle end and tang-head I place four steel balls a, which lie in the tops of holes m or n. When handle end C is crowded toward tang-head A by screwing down thumb-nut L on screw-bolt S, balls a are pressed into holes m and corresponding holes n, so that the handle is locked firmly in place.

To change the position of the handle loosen thumb-nut L until the tops of balls a can slide in groove z. Then turn handle H until the holes n come again opposite holes m and clamp with thumb-nut L.

I have shown my fastenings in a group of four about the pivot, because this arrangement secures the handle in any one of four desirable positions—closed, at right angles with the knife-blade, extended in line with the blade, or turned back on the back of the blade. This last position is assumed when, with the other handle extended in line with the blade, the knife is used like a cleaver; but obviously any desired number of fastening members can be used within the limits of reasonable construction.

The location of the balls and sockets in a circle enables all the fastenings to sustain any stress together and to distribute the work over a considerable area, meanwhile relieving the pivot itself from wear and tear. Thus the joint between tang and handle always will remain sound and firm and as strong to resist the strain of hard work as the knife-tangs themselves. By using detachable fastening members between tang end and handle end, as described, the wear from use and clamping and unclamping the handles is automatically taken up, and breakage from any conceivable cause is easily repaired by inserting a new set of detachable fastening members. It will be obviously advantageous to have the locking members hardened.

I claim—

1. A draw-knife having its handles pivoted to the tangs and rotatable upon the pivots in a plane substantially coincident with the plane of draft, tang-end and handle-end having adjacent surfaces substantially parallel to said plane of draft, the said surfaces containing cavities disposed about the pivot, detached locking members consisting of solids of revolution adapted to lie between said surfaces and to fit said cavities, and means whereby said locking members as they lie in said cavities may be pressed between tang-end and handle-end.

2. A draw-knife having its handles pivoted to the tangs and rotatable upon the pivots in a plane substantially coincident with the plane of draft, tang-end and handle-end having adjacent surfaces substantially parallel to said plane of draft, the said surfaces containing cavities symmetrically disposed about the pivot axis in a circle, an annular groove concentric with the pivot axis connecting the cavities, detached locking members consisting of solids of revolution adapted to lie between said surfaces and to fit said cavities and means whereby said locking members as they lie in said cavities may be pressed between tang-end and handle-end.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. YOUNG.

Witnesses:

ELEANOR F. GROLL,

GRACE M. SHAY.