(No Model.)

F. A. HUMPHREY.

BAR CENTER TOOL.

No. 346,371. Patented July 27, 1886.

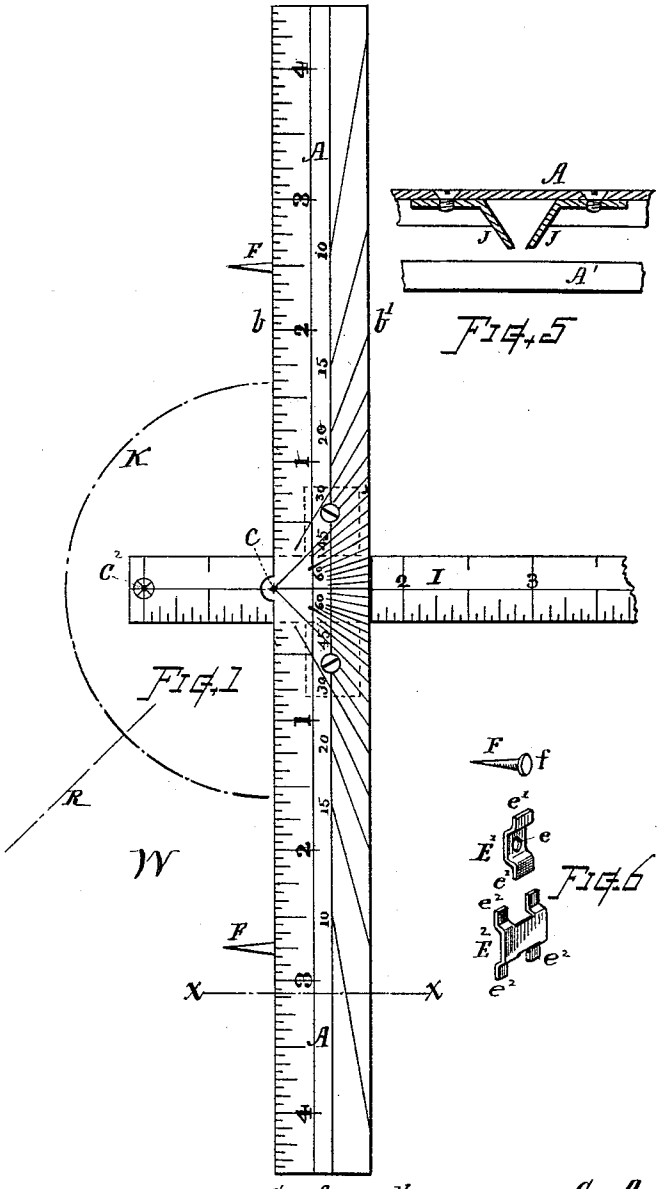


Fig. 1

Fig. 5

Fig. 6

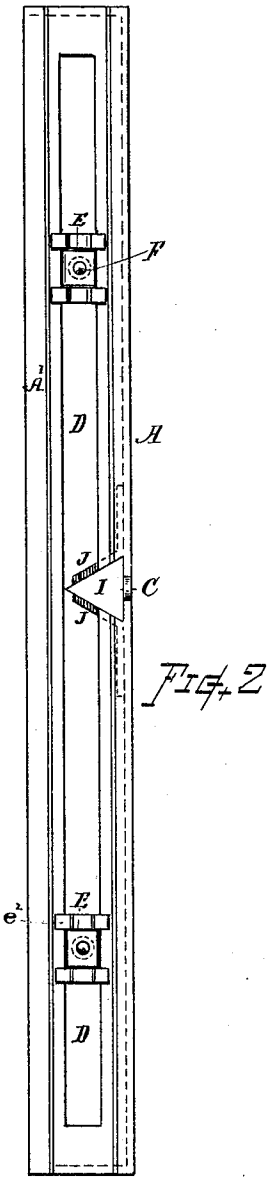


Fig. 2

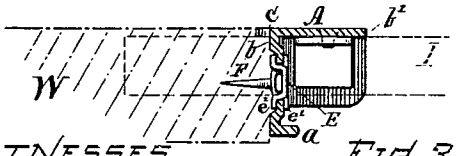


Fig. 3

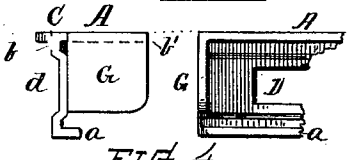


Fig. 4

WITNESSES

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BAR-CENTER TOOL.

SPECIFICATION forming part of Letters Patent No. 346,371, dated July 27, 1886.

Application filed March 25, 1886. Serial No. 196,602. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. HUMPHREY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Bar-Centers, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of this my present invention is to provide a convenient tool for pattern-makers, wood-workers, and other mechanics, for finding, establishing, and maintaining a center or point at the edge of a board or piece of work, or at or over places where a cavity or space occurs at the edge of the board, and from which point or center it is desired to take measurements, turn circles with dividers, trammels, or compasses, or to lay out or project radial or other lines upon the work; also, to provide means for establishing and maintaining a center or point which occupies a position within a cavity and at some distance inward from the line or edge of the work; also, to provide a tool for the purposes above named, having means for connecting it temporarily to the edge of a piece of work to serve as a straight-edge for squares, or bevel-tool while laying out portions of the work; also, to provide a tool for the purposes above named, having suitable indicating-scales and gage-marks for facilitating the laying off of measurements and lines of such kinds and nature as frequently occur in laying out pattern-makers' work and work of the class upon which the tool is designed to be used; also, to provide a tool for the purpose set forth, in which the attaching parts can be conveniently renewed when broken or injured. These objects I attain by the instrument herein illustrated and described, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a top or plan view of my improved bar-center. Fig. 2 is a front view of same. Fig. 3 is a transverse section at line X X, also illustrating the manner of attaching the bar to the work. Fig. 4 shows an end view of the bar and a back view of the end portion of the bar. Fig. 5 is a longitudinal vertical section of the central part of the bar, showing the plates for supporting the transverse center-scale, and Fig. 6 shows the details of construction of attaching studs and sliding stud-carriers.

My improved bar-center consists of a straight bar, A, of suitable length, preferably of metal, bent or cast in angular shape, with a horizontal face-plate and a dependent flange, or such equivalent construction as will afford the requisite strength and stiffness with lightness of structure, and with a stiffening-rib, *a*, along the lower edge, if desired. The face-plate may be, say, three-fourths of an inch broad, (more or less,) and is preferably provided with parallel edges *b b'*. At a central position on the front edge, *b*, a small projection is formed, and upon the surface thereof is marked or indented a point or dot, C, which indicates or forms the center, and which center-point is directly in line with the edge *b* of the bar A. Along the front edge, *b*, or any desired portion thereof, the face of the bar is graduated with measurement-scales of inches and parts of inches, (or with metric or other dimensions, if preferred,) reading, respectively, to the right and left from the center C, while along the back edge, *b'*, the face of the bar is graduated with a protractor-scale radiating from the center C and indicating degrees of a circle of which the point C is the center. The miter-lines, or those indicating forty-five degrees, are carried across the face to the center C. These being lines of more common reference in mechanical work than most of the others, are thus given prominence. Other lines, as the sixty degrees and thirty degrees, which are frequently used in mechanical works, may be prominently indicated on the face of the bar, so as to be readily found.

The downwardly-extended flange or front part of the bar, which is preferably made slightly less in width than the thickness of ordinary boards—seven-eighths of an inch—has a slight longitudinal recess, as indicated at *d*, and is provided with a longitudinal slot, D, within which are supported slides E, that carry pointed studs or pins F, whereby the bar can be temporarily attached to the edge of the board or work W by pressing said studs into the wood, as indicated in Fig. 3. The stud-supporting slides E being movable in the

slot D, the bar can be moved longitudinally after the studs F have been set into the wood W, and a thumb plate or surface, G, is formed at the ends of said bar to facilitate such movement.

The stud support or carrying device is preferably made of parts such as shown in detail, Fig. 6, a common steel tack, F, being used on the stud. A plate, E′, having backward offset ends e' and a central hole, e, forms the front of the device, and a broader plate, E^2, having forwardly-offsetting ears e^2, forms the back of the device. The tack or stud F is inserted through the hole e^2, and the slide or carrier is then fitted into the slot D, with the flanges of the metal between the offsetting and crossed ends e' and e^2. This locks the plates together and confines the head f of the stud F between them.

When a stud becomes broken or injured, the carrier E can be moved along the slot D to a central position, taken out through the recess beneath the center C, a new tack inserted, and the carrier replaced with but slight labor and in a moment's time. The backward recessing of the front at d gives room for the front part of the stud-carriers E and permits of the edge b being fitted close against the work.

When the bar is of considerable length, the slot D may be separated, or made in two shorter slots, or spanned by braces to connect and support the lower part, A′, of the flange with the upper part of the bar, and a recess or enlargement of the slot for the removal of the carrier-plates may be formed at the end of each slot D.

I indicates a transverse adjustable auxiliary bar adapted to be used when it is desired to provide a center within the center at any distance away from the edge b of the bar A. The bar I is disposed at right angles to the bar A, and is fitted to slide longitudinally through a suitable guideway formed on said bar A. A center spot or indent, C^2, is marked on said auxiliary bar in a line coincident with the center C and perpendicular to the line of the edge b. A measurement-index is formed on the face of the bar I, reading from the point or dot C^2, for showing the distance at which said point C^2 stands away from the point C.

In the present instance the auxiliary bar I is of triangular shape and is retained by means of small spring-plates J, attached to the under side of the bar A, as indicated. The lower ends of the plates J are arranged to spring inward slightly, thus giving a holding-friction on the surface of the bar I, and at the same time forcing it upward against the top part of the bar A and retaining it steadily in position.

When it is not required to use the transverse auxiliary bar I, said bar may be withdrawn from connection with the bar A, and the bar may be used without the transverse bar. This would probably occur in the majority of instances in actual practice on ordinary work.

When the instrument is laid away out of use, the bar I can be stuck onto the points of studs F, suitable holes being formed in the bar I for their reception, thus protecting the said points and retaining the parts I and A together. The length of bar I may be about one-half the length of bar A, or as desired, and said bar I may be of any suitable shape, as I do not confine myself to the triangular form therefor, nor to the particular means of attachment, although I consider the method shown to be the best at present known to me for the purpose.

In using my improved bar-center the operation is as follows: The bar A is attached to the side of the board or work W, spanning the cavity, (which may be of any form, or as illustrated by the broken line K,) the points F being forced into the wood at any convenient position by pressure upon the back of the bar or carriers E, having the top surface of the bar A flush with the top of the board W. This can be conveniently accomplished by laying the work top side down upon a flat table, then putting the top face of the bar A on the same table and pressing in the studs F while both the work and bar are in contact with said table surface. When the bar has been attached, it can, by pressure against its ends, be moved so as to bring the center C at the center of the cavity K, (or to such position as required,) which will be indicated by the graduations along the edge b. A center is thus established in the cavity, from which circles can be turned upon the work by means of a compass or dividers having the foot placed in the dot C, or from which radial lines, as at R, can be struck off by means of a straight-edge drawing through the point C and any desired line of the protractor-scale at the back edge of the bar. The back of the bar also serves as a straight-edge on which to place a tri-square, gages, or other tools for laying out parts of the work.

If the desired center-point is within the cavity and not in line with the edge of the work, it can be established by the aid of the transverse gage-bar I, the center C^2 being the point from which the work is laid off.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. A bar-center tool consisting of a straight-faced bar containing a center-indicating mark, indent, or dot, as C, with distance-indicating scales that read to right and left from said center, and provided with adjustable slides carrying studs or points, whereby said bar can be temporarily attached to a piece of work, for the purposes set forth.

2. A bar-center tool consisting of a straight edge or bar having a center-indicating mark, as C, and provided with attaching devices which are adjustable longitudinally in relation to said bar, to permit endwise movement of the bar and center while temporarily attached to the work, substantially as set forth.

3. A bar-center tool consisting of a straight-faced bar containing a center-indicating mark

or dot in line with its front edge, series of measurement-graduations at right and left of said center-mark, and provided with adjustable studs or points adapted for temporarily securing said tool to the work, for the purposes set forth.

4. A bar-center tool consisting of a plate or bar formed with front and rear parallel edges, as *b b'*, provided with longitudinal guides containing adjustable studs, for temporarily attaching it to the side of a board or other piece to be worked, and having upon its face a center-indicating mark, right and left series of measurement-indicating graduations, and a series of protractor-graduations radiating from said center-mark, substantially as and for the purpose set forth.

5. A bar-center tool consisting of a straight-faced bar having a center-indicating mark, measurement-indicating scales at right and left of said center-mark, and a protractor-scale marked thereon and provided with a downwardly-extended longitudinally-slotted flange, combined with adjustable slides or plates supported in said slot and carrying attaching-points, substantially as and for the purpose set forth.

6. The combination of the bar A, provided with means for temporarily attaching it to the work, substantially as described, and a transversely-disposed bar, I, having a center-indicating mark, C^2, supported in connection with and fitted to slide in transverse guides on said bar A, as and for the purpose set forth.

7. The combination, with the main bar A, provided with adjustable attaching-points F, and having the center-indicating mark and right and left graduated scales upon its face, of an auxiliary bar, I, having a center-indicating mark, C^2, and a series of measurement-graduations marked thereon, and adapted to be inserted and adjusted through transverse guideways at the center of said main bar, substantially as and for the purpose set forth.

8. The combination, with the bar A, having a longitudinal slot, D, of the stud-carrier E, composed of two plates having offsetting-edges e' e^2, that embrace the flanges at the edges of said slot, and headed and pointed stud F, projecting through the front of said carrier, with its head confined between the plates thereof, substantially as set forth.

9. In a bar-center tool, the bar A, formed with the horizontal face-plate, and the downwardly-extended flange having a longitudinal recess, *d*, and slot D, and the end plates, G, substantially as and for the purposes shown and described.

Witness my hand this 20th day of March, A. D. 1886.

FRANK A. HUMPHREY.

Witnesses:

CHAS. H. BURLEIGH,

HERBERT P. BARTON.