

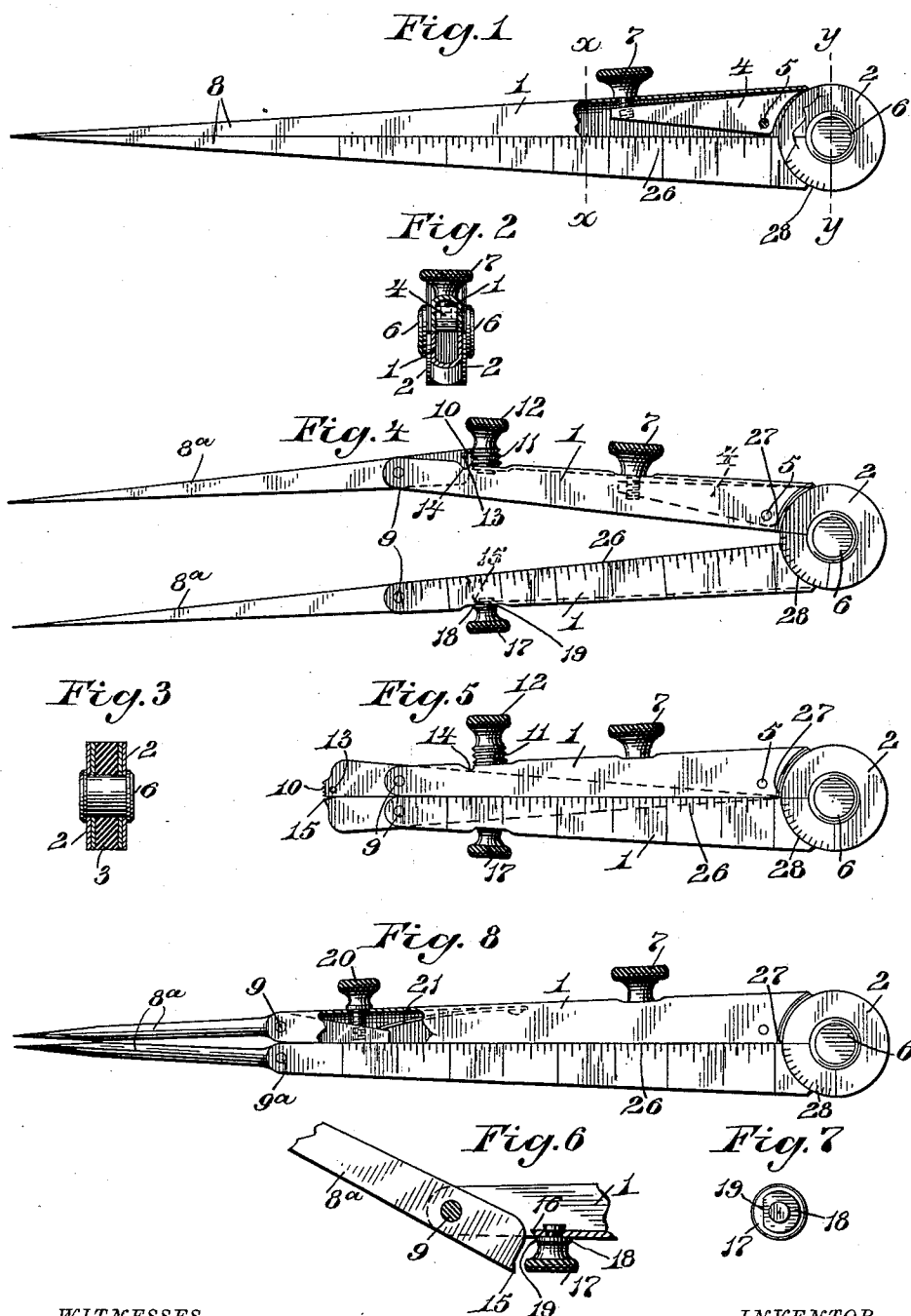
(No Model.)

2 Sheets—Sheet 1.

W. A. BERNARD.
DIVIDERS.

No. 479,112.

Patented July 19, 1892.



WITNESSES

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William A. Bernard
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 9

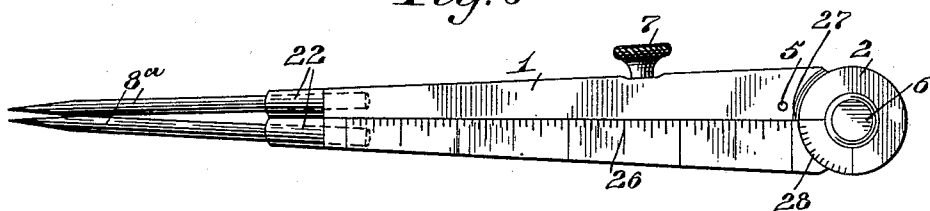


Fig. 10

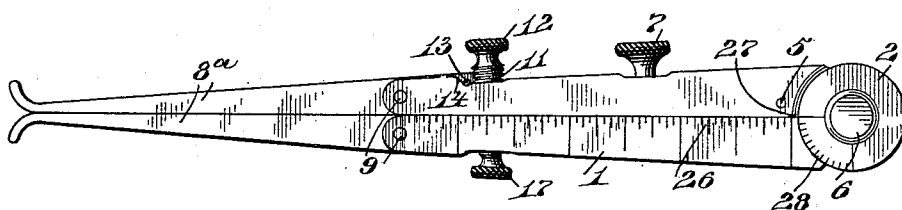


Fig. 11

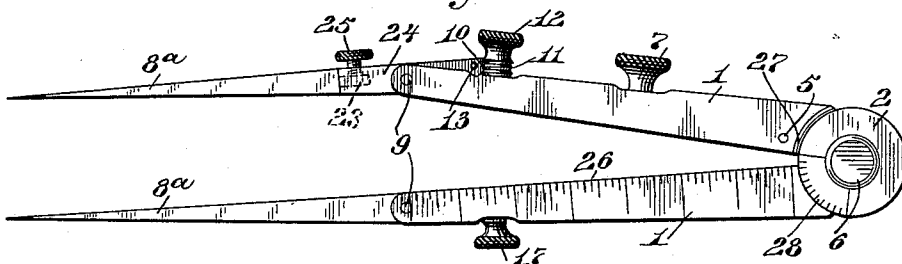
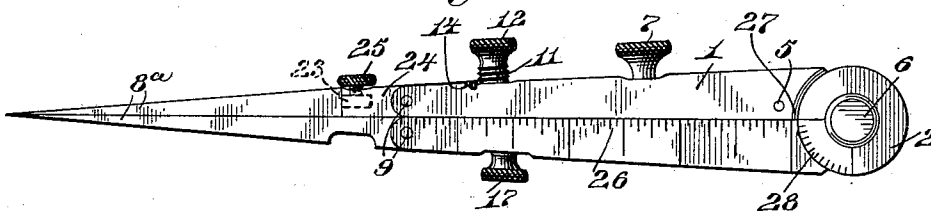


Fig. 12



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UNITED STATES PATENT OFFICE.

WILLIAM A. BERNARD, OF NEW HAVEN, CONNECTICUT.

DIVIDERS.

SPECIFICATION forming part of Letters Patent No. 479,112, dated July 19, 1892.

Application filed October 1, 1891. Serial No. 407,382. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. BERNARD, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Dividers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to dividers, compasses, calipers, &c., and has for its object to provide a construction which will enable tools of this class to be made of sheet metal, the finished tools being amply strong, neat, and attractive in general appearance and very much lighter and cheaper than it has been possible to make them as heretofore constructed.

So far as I am aware the only tools of this class that have heretofore been placed upon the market have been made of solid stock, either forged or cast. They were therefore clumsy and heavy in comparison with my present tools, and even the lower grades were expensive to produce if any attempt at accuracy was made, for the reason that milling, counterboring, &c., was necessary to fit the joints where the legs are pivoted together.

In order that I may be enabled to produce simple, inexpensive, and accurately-finished tools of this class, I have devised the simple and novel construction which I will now describe, referring by numbers to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of one form of my novel tool, partially broken away to show the construction; Fig. 2, a cross-section on the line $x x$ in Fig. 1, looking toward the right; Fig. 3, a cross-section on the line $y y$ in Fig. 1; Fig. 4, a form of my novel tool having folding points, one of said points being shown fully opened and the other partially opened; Fig. 5, a view showing the points in a closed position; Fig. 6, a detail view showing the means for locking one of the points in the opened position, Fig. 7, an inverted plan view of the rotary locking-piece; and Figs. 8, 9, 10, 11, and 12 are views illustrating various changes in the details of construction and showing the application of various styles of

points to tools of this class embodying my novel improvements.

1 denotes the legs, which are made U shape in cross-section, as clearly shown in Figs. 1 and 2. Each of the legs is provided at the inner end with disks 2, the disks upon one of the legs lying in the planes of the sides of said leg and the disks on the other leg being offset outward sufficiently to inclose the other disks. Between the inner pair of disks I place a washer 3, which may be made of wood, hard rubber, or any suitable material, and which entirely fills the space between the inner disks, and in use moves with said inner disks, being rigidly secured thereto in any suitable manner. The pivot 6 passes entirely through the two pairs of disks and the washer, thus making the joint solid and very strong, the effect of the disks being to give a greater bearing-surface, which makes the joint work more smoothly than in instruments as ordinarily constructed.

4 denotes a locking-piece lying within one of the legs, where it is pivoted, as at 5. The rear end of this locking-piece is curved to correspond approximately with the curvature of the washer, and in its normal position lies nearly in contact therewith, as shown in Fig. 1. The other end of the locking-piece extends forward, and is engaged by a thumb-screw 7, which passes loosely through the back of the leg and is threaded to engage the locking-piece. Having set the legs at the required position, they may be locked there by turning the thumb-screw inward. The effect is to raise the forward end of the locking-piece and throw the curved rear end thereof against the washer, as indicated by dotted lines in Fig. 4, thus locking the legs in position.

In Fig. 1 the points are indicated by 8 and are made integral with the legs, the U shape continuing until the taper of the legs to form the points causes it to run out.

In Figs. 4, 5, 6, and 7 I have illustrated what is really my preferred form for ordinary uses. In this form the points, which are indicated by 8^a, are made independent of the legs, are pivoted thereto, as at 9, and are adapted to be folded inward within the legs, as clearly shown in Fig. 5.

As it is necessary in this class of dividers to get very fine adjustments, I provide the base of one of the points with threads 10, which are adapted to engage a thread 11 on a rotary adjusting-piece 12. This adjusting-piece is of convenient shape and size to be operated by the fingers, the inner end of the shank being riveted on the inner side on the back of the legs, as shown by dotted lines in Fig. 4.

13 is a stop-pin on the base of the point, which is adapted to engage the back of the leg to limit the outward movement of the point, a notch 14 being ordinarily formed in the back to receive the pin. The operation of this point is as follows: Suppose the point to be in the closed position, as in Fig. 5. The operator opens out the legs until they are approximately at right angles to each other and then swings the point outward until the threads on the point engage thread 11 on the adjusting-piece. The latter is then rotated to place the point at any desired adjustment. In closing the instrument the operator simply turns the adjusting-piece in the opposite direction until the screw-threads are disengaged and then folds the point within the handle, as clearly shown in Fig. 5. The other point may be adjusted in any suitable manner. I preferably, however, provide the base of this point with a shoulder 15, which engages a shoulder 16 at the outer end of the back of the leg. (See Fig. 6.) This shoulder serves as a stop to limit the outward movement of the leg.

In order to lock the leg in operative position, I provide a rotary locking-button 17, which is secured in position by heading down the inner end of its shank in the same manner as the adjusting-piece. This locking-button is provided with a circular portion 18, one side of which is cut away, as at 19. In swinging the point to operative position or in closing it the operator turns the locking-button so that cut-away portion 19 lies parallel with shoulder 15, which permits the point to swing freely. To lock the point in operative position, the operator turns the locking-button so that the circular portion will pass over shoulder 15, thus retaining it securely in place. In practice the under side of the circular portion of the locking-piece is inclined slightly, forming a cam, which locks the point rigidly in position and wholly prevents lost motion.

In the form shown in Fig. 8 the points are made independent of the legs and are indicated by 8^a, the same as in the form last described. One of the points is riveted firmly to the leg, as at 9^a, the other being pivoted, as at 9. The base of the pivoted leg is provided with a threaded opening, which is engaged by a set-screw 20, passing loosely through the back. A spring 21 presses against the base of this point to throw it toward the open position, thereby acting to hold the base of the head of the set-screw against the back, so that the set-screw when turned will always act to swing the point.

In the form illustrated in Fig. 9 independent points 8^a are used; but the legs are made longer than in the forms just described, and the upper ends of the legs are rounded in dies to form sockets 22, which receive the ends of the legs.

The forms illustrated in Figs. 10, 11, and 12 are substantially like the form illustrated in Figs. 4, 5, and 6, with the exception of the style of points used. In Figs. 11 and 12 one of the points 8^a is made detachable, being provided at its inner end with a shank 23, which engages a folding holder 24, and is locked in position by a set-screw 25, the holder, with the detachable point therein, folding in just the same manner that the points fold in the other form.

26 denotes a scale graduated to inches and fractions thereof, which I place upon one or both sides or one or both legs of my novel divider. The shoulders 27, formed at the junction of the offset disks with the sides of the legs, serve as stops or gages, making the instrument very convenient for measuring the thickness of objects.

28 denotes a circular scale on one or both of the offset disks, which is graduated to set the points at any desired distance apart without the aid of another instrument, as has heretofore been necessary.

Having thus described my invention, I claim—

1. A divider consisting of legs U-shaped in cross-section and having disks at the inner ends parallel with the sides and a washer between the inner disks and points pivoted at the outer ends of the U-shaped legs and adapted to fold within the legs, so as to be wholly covered and protected when in the closed position.

2. A divider consisting of legs U-shaped in cross-section, disks at the inner ends of said legs parallel with the sides of said legs, the disks upon one of the legs lying outside of the disks upon the other leg, a washer lying between the inner disks, and a pivoted locking-piece the rear end of which is adapted to engage the washer, thereby locking the legs at any required adjustment.

3. A divider consisting of legs U-shaped in cross-section, disks at the inner ends of said legs, a washer between the inner disks, a pivoted locking-piece in one of the legs, the rear end of which is adapted to engage the washer, and a set-screw engaging the other end of the locking-piece, whereby it is operated.

4. A divider having legs U-shaped in cross-section and folding points pivoted at the outer ends of the legs, one of said points having at its base screw-threads, and an adjusting piece having a thread adapted to engage the threads on the base of the point, whereby said point may be placed at any required adjustment.

5. A divider consisting of legs struck up from sheet metal and folding points pivoted in the outer ends of said legs, one of said

points having at its base screw-threads and the back of the leg being provided with a rotary adjusting-piece adapted to engage the threads upon the point.

- 5 6. A divider consisting of legs struck up from sheet metal and having folding points pivoted at their outer ends, one of said points having at its base screw-threads adapted to engage a thread upon a rotary adjusting-
10 piece in the leg, the other point having at its base a shoulder adapted to be engaged by a

rotary locking-button, whereby it is held in operative position, said locking-button having a cut-away portion, which permits the point to be folded inward, substantially as 15 described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. BERNARD.

Witnesses:

HENRY STALEY,

WILLIAM A. FITZGERALD.