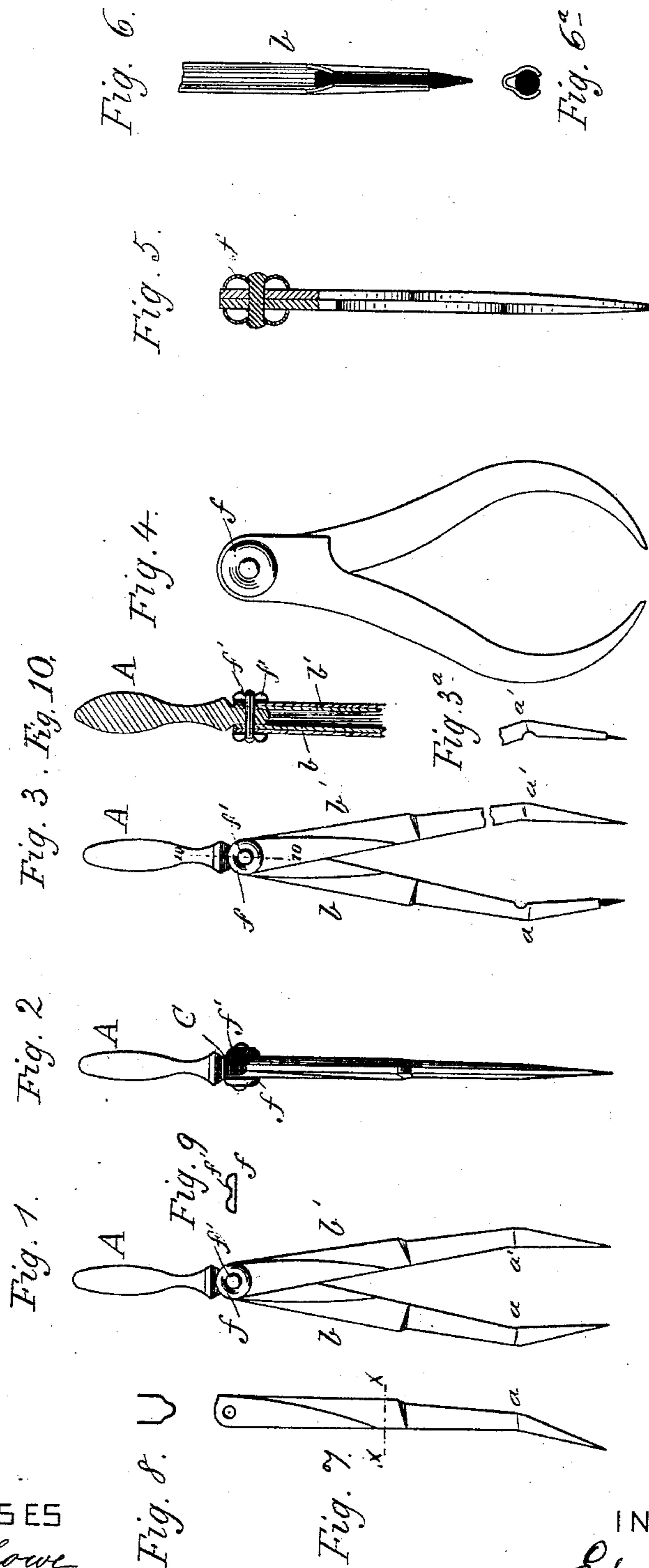


(No Model.)

E. WEISSENBORN.
CALIPERS AND DIVIDERS.

No. 341,080.

Patented May 4, 1886.



WITNESSES
Wm. A. Lowe
Charles E. Lee

INVENTOR
Edward Weissenborn

UNITED STATES PATENT OFFICE.

EDWARD WEISSENBORN, OF JERSEY CITY, NEW JERSEY.

CALIPERS OR DIVIDERS.

SPECIFICATION forming part of Letters Patent No. 341,080, dated May 4, 1886.

Application filed May 5, 1885. Serial No. 164,446. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WEISSENBORN, of Jersey City, in the county of Hudson, of the State of New Jersey, have invented a new and
5 useful Improvement in the Construction of Calipers and Dividers, of which the following is a full, clear, and accurate description, reference being had to the accompanying drawings, forming part of this specification, and in
10 which similar letters of reference indicate corresponding parts.

Figure 1 represents a side view of my improved dividers when open; Fig. 2, a front view of the improved dividers or compasses
15 closed. Figs. 3 and 3^a are side views of my improved dividers open, showing lead or points inserted in one leg. Fig. 4 represents a side view, especially showing my spring-washer applied to calipers. Fig. 5 represents a sectional view of calipers, showing the spring-washer in section. Figs. 6 and 6^a represent
20 part of one leg of my improved dividers with the lead inserted in the same. Fig. 7 shows one leg detached. Fig. 8 shows a section of leg on line *xx*. Fig. 9 shows section of spring-washer. Fig. 10 is a vertical section of the upper portion of the divider on the line 10 10, Fig. 3.

My improvement is made as follows: The
30 two legs *b b'* of the dividers are stamped out preferably of thin sheet metal, which I have found to be the best material for my purpose. The lower portions of these legs are formed with bends *a a'*, thereby bringing the points
35 of the dividers closely together, which enables it to be used for the division of very small spaces. The legs *b b'* are stamped out hollow.

It will be observed that in Fig. 3 the bend
40 *a* is provided with a pencil-point, and in Fig. 3^a the bend *a'* is provided with a needle or steel point. These points are held in position by the natural elasticity of the bends *a* and *a'*, derived from the springy nature of the material of which the compass and divider legs are
45 made. The elasticity of these bends admits of forcing the pencil or needle point into the bends, where it is firmly held by the spring or elasticity of the parts, and the parts are then ready for use as dividers.

50 The two legs *b b'* are attached to a handle,

A, provided with a small cylindrical piece of metal, C, (seen in Fig. 2,) this piece of metal C serving as a resistance to the spring-washer *f*, which I will now explain.

The hollow expanding or spring washers 55 form a very important part of my invention, as they do away with an objectionable feature observed not only in mathematical instruments, to which they are especially adapted to be applied, but also to a number of other in-
60 struments used in or about a machine-shop, such as calipers and the like.

Nothing causes the draftsman more annoyance than an imperfectly-working instrument, and the reason of imperfect working is
65 generally found to be in defective flange-gear.

All ordinary washers and binders in use upon the class of instruments above spoken of consist of a solid rounded piece of metal, one side of which rests with its full area upon
70 the part to which it is attached. In opening or closing an instrument provided with such a washer it very frequently happens, even with a new instrument that has not been subjected to wear, that this opening or closing is accom-
75 panied with more or less of a jerking motion, which is very objectionable when an accurate measurement is desired. The cause of this trouble is, that too much of the area of the washer rests upon the shank or leg to which
80 it is attached, and therefore the slightest irregularity in the plane portion of the washer creates a tendency to a jerking motion as the instrument is opened or closed. By my spring-washer this difficulty is completely overcome. 85

The spring-washers *f* (shown especially in Figs. 4 and 5) are stamped out of thin sheet metal with such hollowness that their circumference only may rest upon the plane portion to which they are attached. Each washer has
90 a depressed central portion, *f'*, to receive the head of the rivet. When the spring-washers are riveted so as to bind the part or parts to which they are applied, they, by reason of their hollow form, only press with their circumference upon such part, and thereby give the in-
95 strument to which they are applied as washers or binders elasticity and strength, and the instruments open and close easily and freely without any jerking motion. 100

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

1. Calipers or dividers consisting of legs, 5 hollow washers *ff*, having depressed central portions, *f' f'*, and resting by their edges on the upper ends of the legs, and a pivot-pin having heads occupying the depressed central portions, substantially as set forth.
- 10 2. Calipers or dividers consisting of legs *b b'*, struck up hollow, having bends *a a'* near

their lower ends, cylindrical middle piece, *C*, having a handle, *A*, hollow spring-washers *ff*, resting by their edges on the legs, and a double-headed pin securing the parts together, 15 substantially as set forth.

In witness whereof I have hereunto set my hand this 27th day of April, 1885.

EDWARD WEISSENBORN.

In presence of—

R. F. VAN BOSKERCK,
CHARLES G. COE.