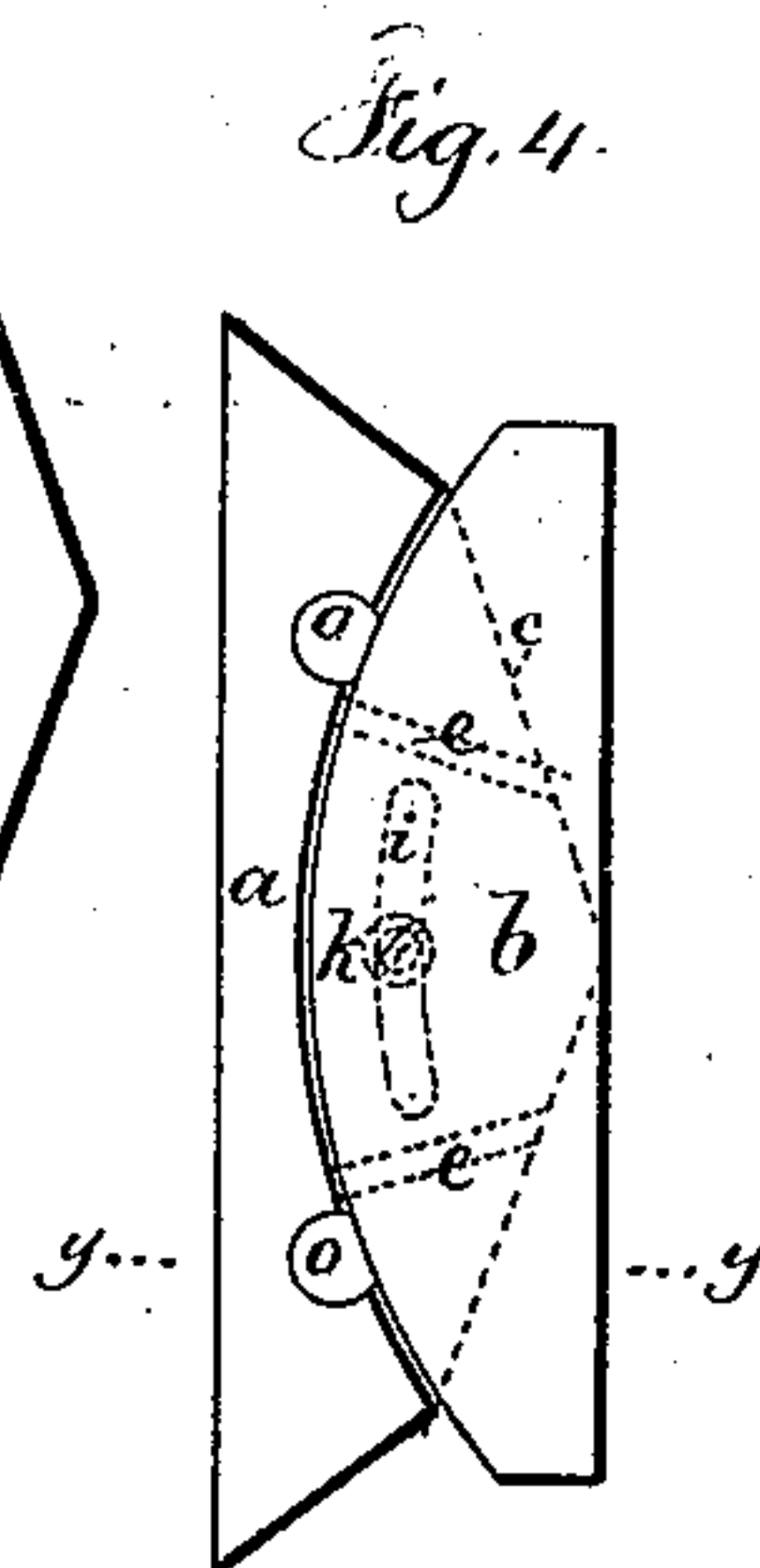
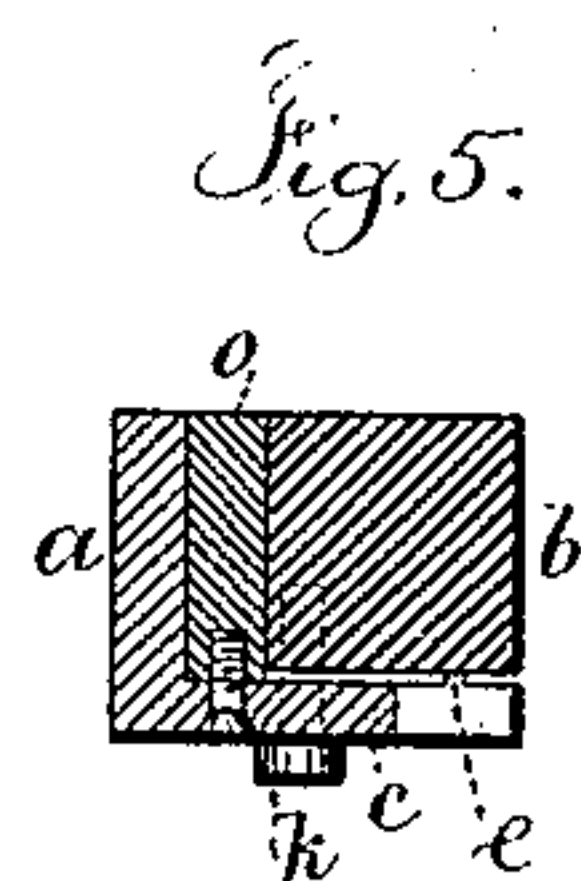
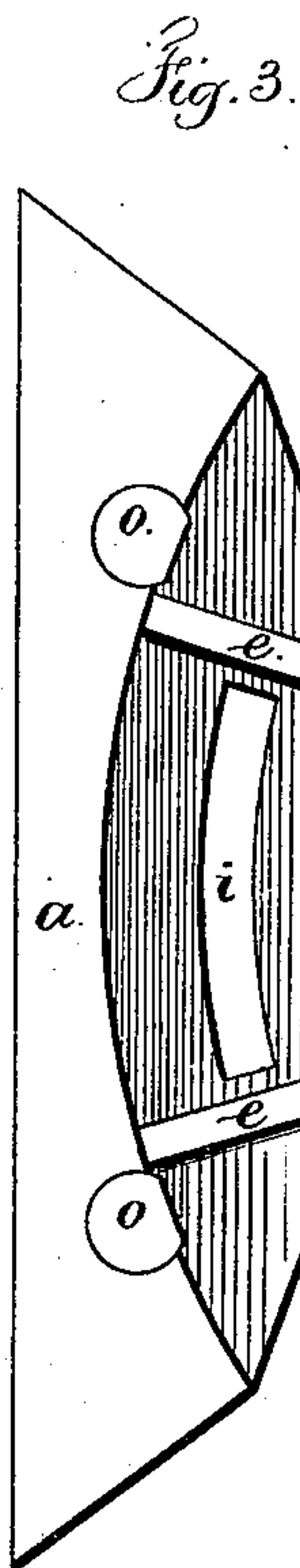
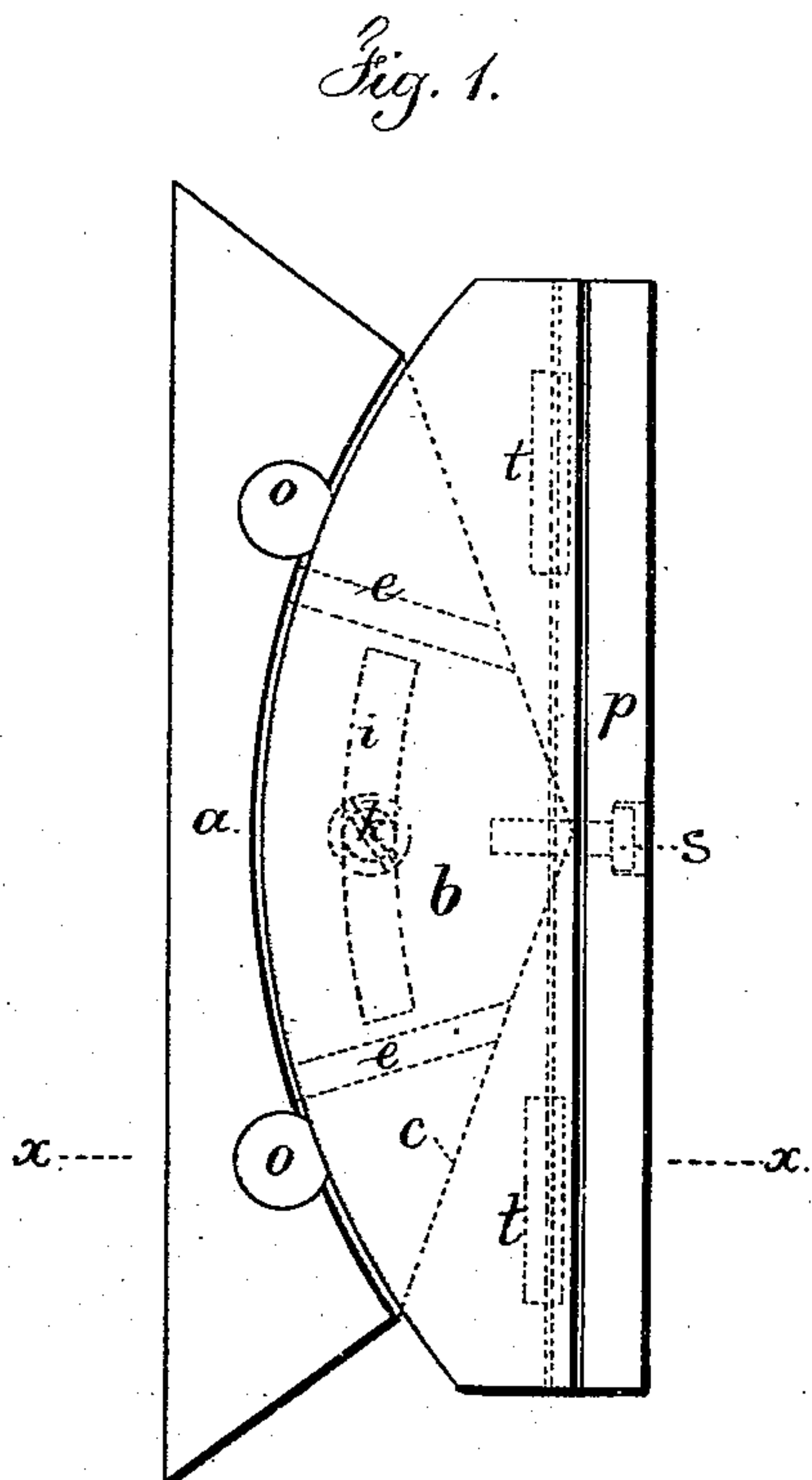
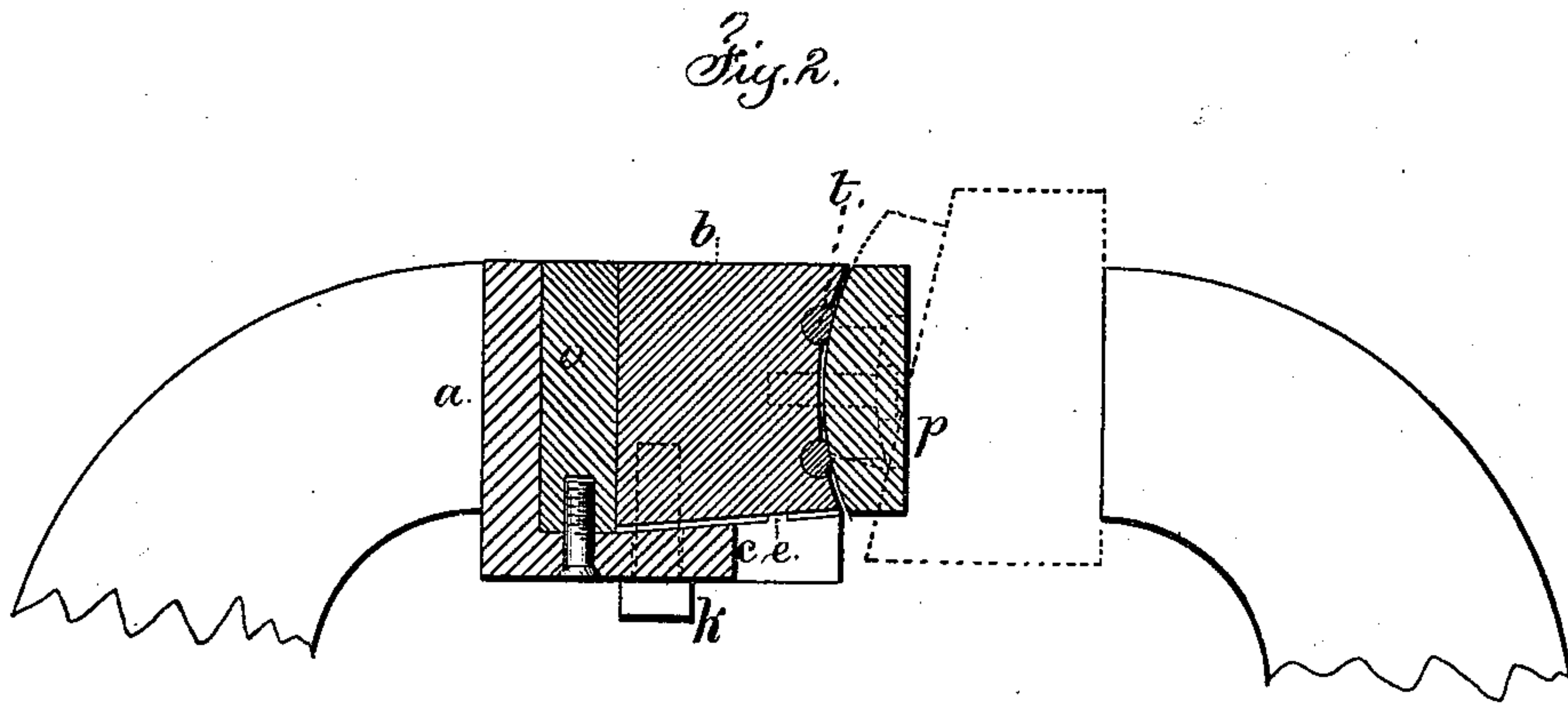


(No Model.)

B. F. STEPHENS.
Taper Jaw for Vises.

No. 234,930.

Patented Nov. 30, 1880.



Witnesses

Chas. H. Smith
Harold W. Terrell

Inventor

Benjamin F. Stephens.

per Lemuel W. Terrell
att'y

UNITED STATES PATENT OFFICE.

BENJAMIN F. STEPHENS, OF BROOKLYN, NEW YORK.

TAPER JAW FOR VISES.

SPECIFICATION forming part of Letters Patent No. 234,930, dated November 30, 1880.

Application filed April 6, 1880. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. STEPHENS, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Taper Jaws for Vises, of which the following is a specification.

In Letters Patent granted April 9, 1872, to A. P. Stephens, No. 125,625, a taper-jaw attachment is shown in which the back of the jaw is a segment of a circle, and said jaw slides endwise in a similarly-shaped jaw-block. Difficulty arises in making these, because the segmental jaw is of steel and does not retain its shape perfectly after it has been fitted and then tempered; hence there is considerable expense in grinding the same or otherwise fitting it into the jaw-block before or after hardening, and if the parts do not fit with great accuracy the friction prevents the proper freedom of movement.

My present invention is an improvement upon the aforesaid invention, whereby I am enabled to fit the segmental jaw into the jaw-block with much less expense than heretofore, and the jaw is less liable to bind than heretofore. It is to be borne in mind that in clamping a wedge-shaped article the jaw has to slide endwise with but very little friction; otherwise the jaw will not accommodate itself to the surface of the tapering article; hence the parts must be so made that there is nothing that can cause one surface to bind against the other.

I make use of separate bearing-studs secured within the jaw-block for the segmental jaw to slide against. Said studs are adapted to being fitted and hardened, if desired, and they are the only portions against which the segmental jaw bears, and hence the jaw-block can be of cast metal and require but little finishing, and the parts do not become obstructed by fine particles of metal that may pass in between the jaw and jaw-block.

In the drawings, Figure 1 is a plan of the taper jaw. Fig. 2 is a vertical section at the line $x x$, and Fig. 3 is a plan of the jaw-block with the segmental jaw removed. Fig. 4 is a plan; and Fig. 5 is a section at the line $y y$ of the taper jaw, showing the jaw-block made with a level flange or rest for the vise-jaw.

The jaw-block a is made of a proper size and shape. It may be one side or jaw of a vise, or

it may be a block to be attached to or placed upon a vise-jaw.

b is the segmental jaw, the back being an arc of a circle and the face a plane, similar to that in aforesaid patent.

The lower part of the block a is made with a flange, c , upon which rests the jaw b , and it is preferable to provide ribs upon the surface of this flange c , as shown at e , Fig. 3, so that the surfaces of these ribs may be filed off to form a proper bearing for the jaw.

There is, by preference, a slot, i , in this flange c , for the bolt or screw k , that attaches this jaw b , said slot being an arc of a circle having the same center as the back of the jaw.

The bearing-studs o are preferably of steel. They are introduced into recesses in the jaw-block a . I find it preferable to use round studs introduced into holes bored into the jaw-block, the studs projecting beyond the curved face of the jaw-block, and being filed off more or less to form a flat or nearly flat bearing for the curved side of the segmental jaw. This jaw may be of cast or wrought iron, with a steel face either welded or otherwise secured to the iron. This lessens the cost of construction, and the jaw is not warped in tempering.

These bearing-studs may be inserted at an inclination, if desired, instead of being parallel to the curved face of the segmental jaw; but I prefer to make them in the manner shown, and to secure them in place by small screws or pins inserted from below the flange c ; or the lower ends of the bearing-studs may be reduced in size to form pins that pass through the lower part of the jaw-block and are riveted up.

The surface of the segmental jaw may be concave to receive a face-piece, p , the back of which is a cylindrical segment of corresponding curvature, the parts being attached by a screw passing through a vertical slot in the face-piece p into the jaw b , as shown by dotted lines. This allows the jaw to accommodate itself to any irregular taper of the article that is being held, as indicated by dotted lines in Fig. 2.

I have shown horizontal bearing-studs t in the curved face of the jaw b , against which the convex back of the face-piece p rests.

In Fig. 2 the flange c is represented at a

slight backward inclination. The same, however, might be made level, as shown in Fig. 5, and the face of the jaw may be plain without the auxiliary face *p*, as shown in Figs. 4 and 5.

5 I claim as my invention—

1. The combination, with the segmental vise-jaw and jaw-block, of bearing-studs inserted into recesses in the jaw-block, and against which bearing-studs the curved back of the
10 segmental jaw rests, substantially as set forth.

2. The face-piece *p*, having a curved back, in combination with the segmental vise-jaw, hav-

ing a curved face, and bearing-studs *t* to receive the face-piece, and the attaching-screw that passes through a vertical slot in the face-piece and enters the vise-jaw, substantially as
15 set forth.

Signed by me this 2d day of April, A. D. 1880.

BENJ. F. STEPHENS.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.