

No. 610,301.

Patented Sept. 6, 1898.

S. W. GRAY.

OPTICIAN'S INSTRUMENT FOR ADJUSTING SPECTACLES.

(Application filed Jan. 20, 1898.)

No Model.)

Fig. 1.

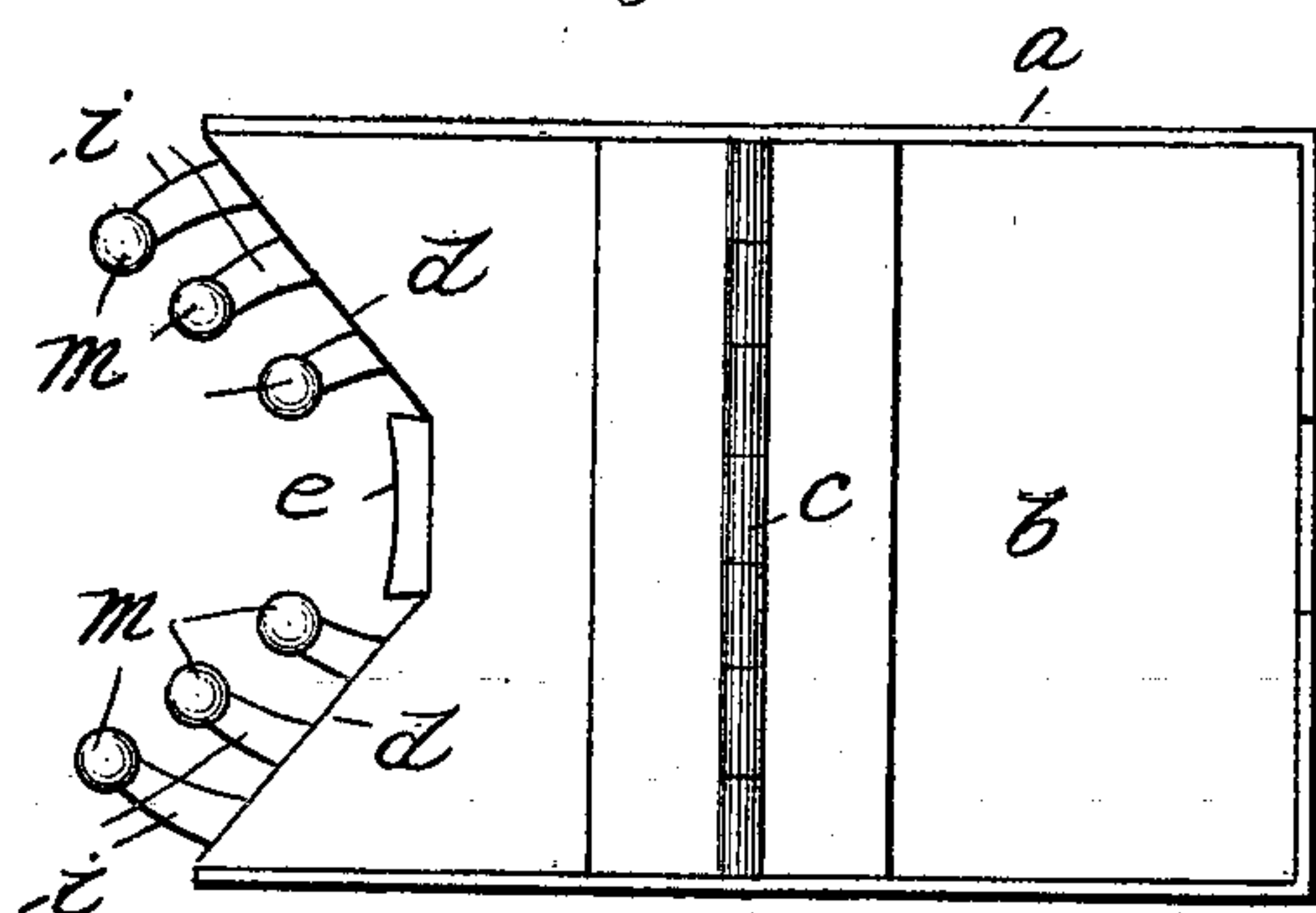


Fig. 2.

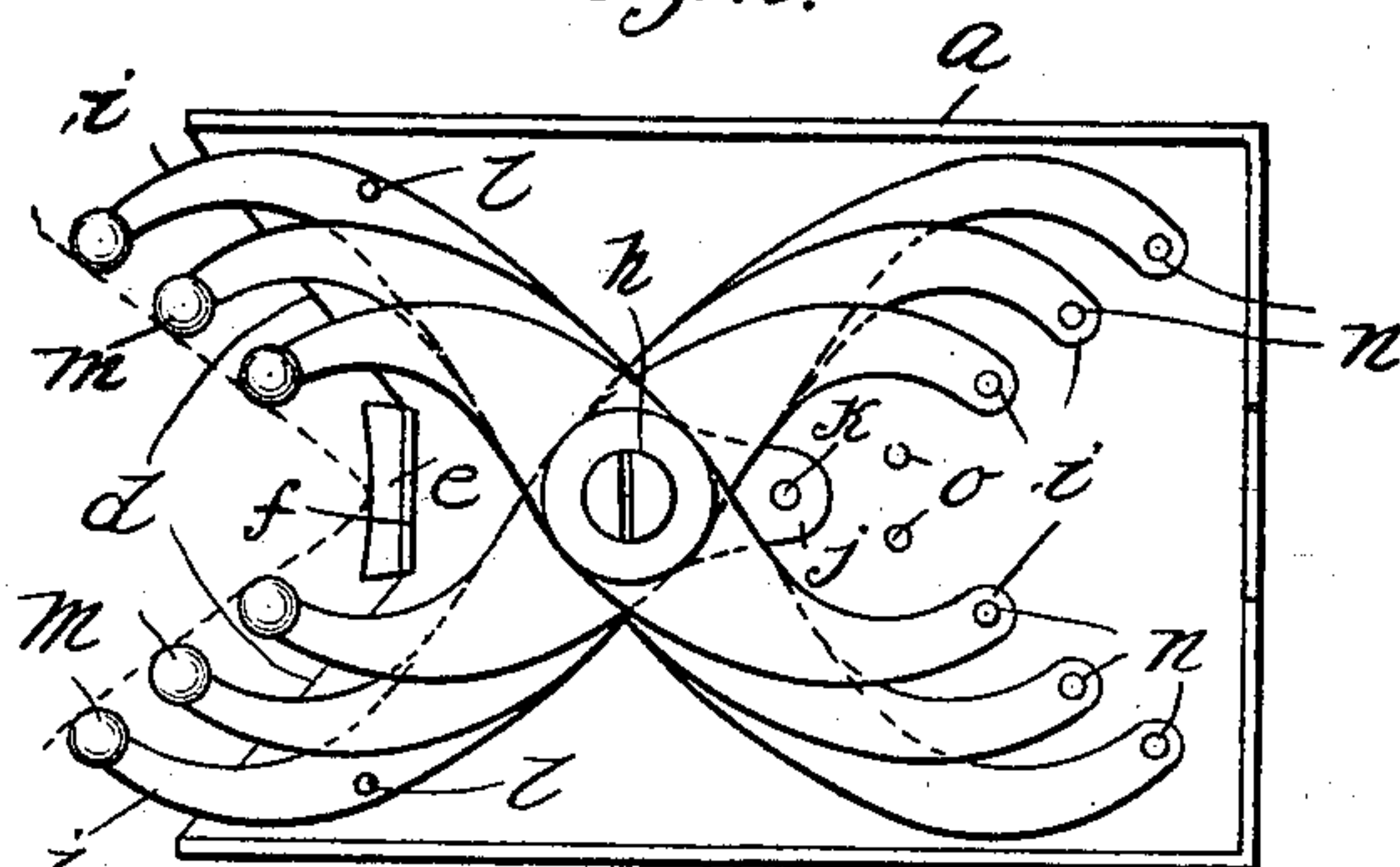


Fig. 4.

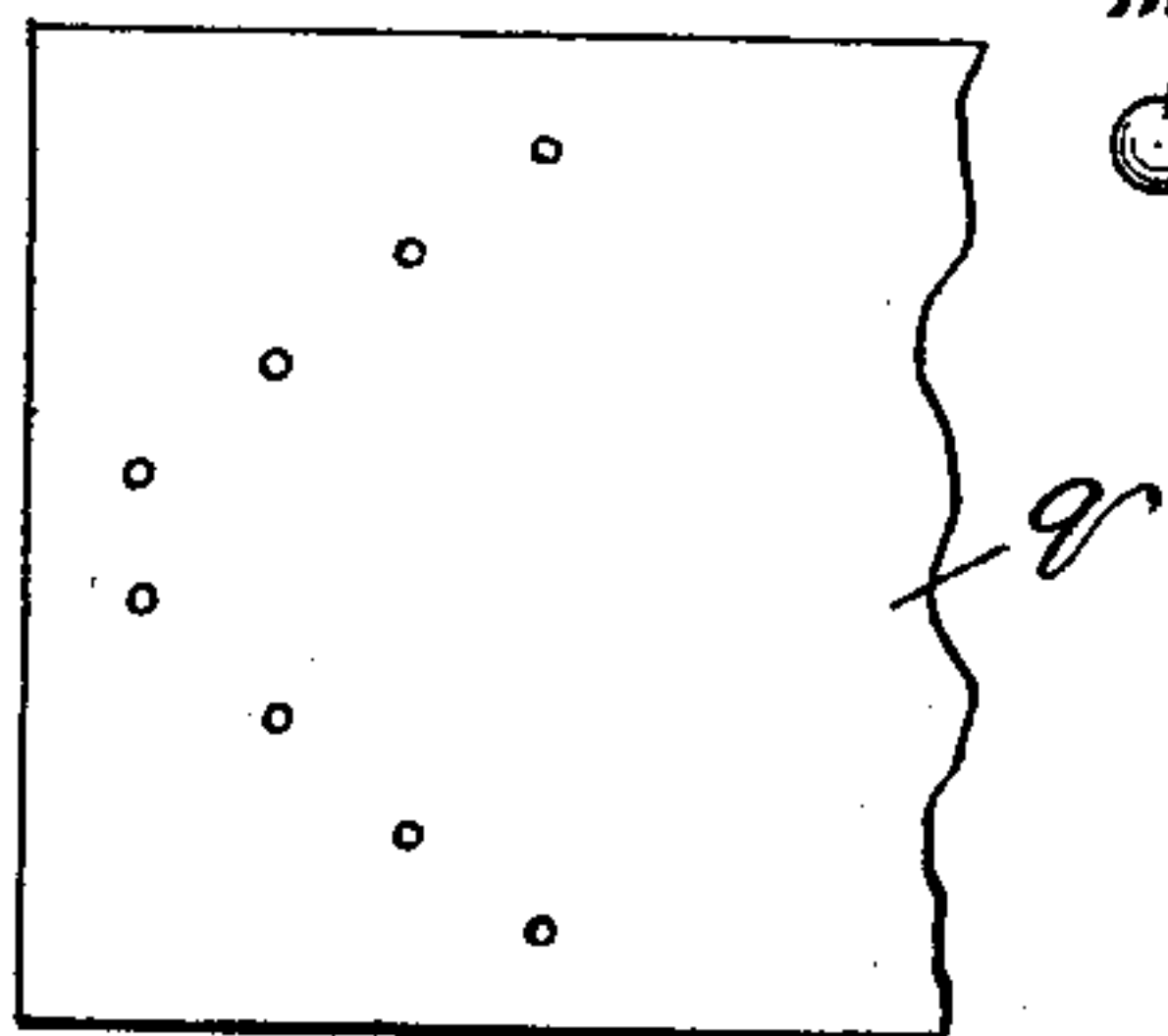


Fig. 3.

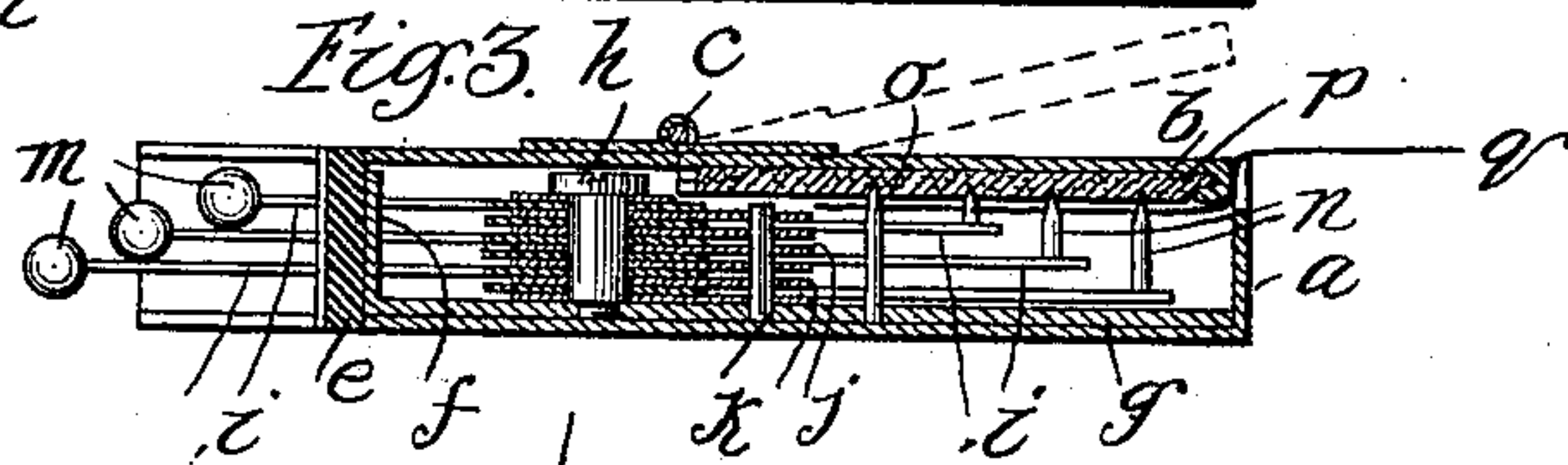
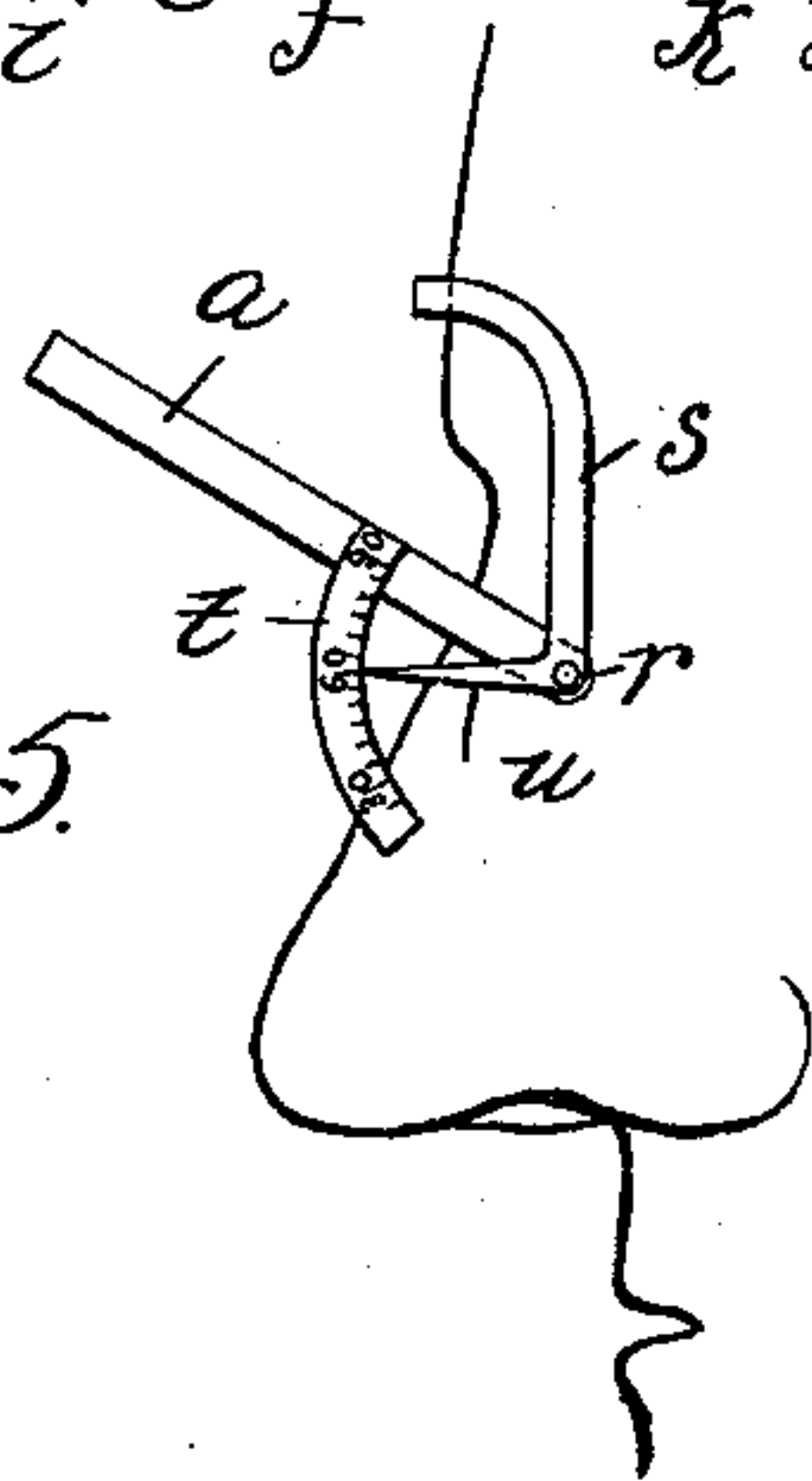


Fig. 5.



Witnesses.

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OPTICIAN'S INSTRUMENT FOR ADJUSTING SPECTACLES.

SPECIFICATION forming part of Letters Patent No. 610,301, dated September 6, 1898.

Application filed January 20, 1898. Serial No. 667,225. (No model.)

To all whom it may concern:

Be it known that I, SILAS W. GRAY, of Fort Dodge, in the county of Webster and State of Iowa, have invented certain new and useful
5 Improvements in Opticians' Instruments for Adjusting Spectacles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in
10 which similar letters of reference in the different figures indicate like parts.

The object of my invention is to construct an instrument in which a number of calipers are so combined that the general outline of
15 any given exterior surface, regular or irregular, may be determined and accurately registered, preferably by means of punctures or impressions upon paper or other suitable material, and while the same may be applicable
20 to various purposes it is more especially adapted and intended to be used by opticians in obtaining data for determining the varying shapes required for spectacle nose-bridges by different individuals.

A further object is to so combine said instrument with the usual spectacle trial-frame that not only the relative size and contour of the spectacle-bridge may be determined thereby, but the requisite angle thereof to the line
30 of the nose as well.

I accomplish these results in the manner hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a plan view of
35 my improved device. Fig. 2 is a like view as it would appear upon removing the top. Fig. 3 is a central longitudinal vertical sectional view thereof. Fig. 4 is a detail view showing the manner in which an impression may
40 be taken upon a card to preserve the registration of a given contour, and Fig. 5 is a side view of my improved instrument as applied to a spectacle trial-frame for the purpose of determining the angle of the nose-
45 bridge as applied to a given profile.

Referring to the drawings, *a* represents the case of my improved device, which is preferably formed from sheet metal, having a top lid *b*, which is hinged at *c*. The front end is
50 cut inwardly from each side toward the mid-

dle at angles oblique to the sides, as shown at *dd*, the front end of the case being left open. A block *e*, having an inwardly-curved face, is intended to act as a stop to rest against the nose-crest and form a stop for the purpose
55 hereinafter stated, said stop being preferably attached to the upturned flange *f* of a plate *g*, Fig. 3, which is attached to the bottom of the case. A shouldered stud or screw
60 *h*, having an enlarged head, is tapped into the plate *g* at a point near the center of the case, which serves as a pivot for a series, preferably six, of bent caliper-arms *i*, which are
65 bored midway between the ends to receive said stud upon which they are mounted. Interposed between the respective caliper-arms are metal washers *j*, Figs. 2 and 3, which are held stationary by means of a pin *k*, which is projected through them and into the casing. By means of the screw-stud a sufficient
70 pressure may be placed upon the arms, so that the frictional contact may hold them normally in any given position in which they may be placed, each arm being capable of movement independently of its fellows.

The arms *i* are arranged in pairs of three different lengths, the longer pair being intended to occupy the outermost position laterally, the shorter pair the innermost, and the remaining pair, which is midway between the others
80 in length, occupying the intermediate position. The block *e* is interposed between, so as to engage the innermost arms and limit their movement toward each other, while pins *ll*, Fig. 3, are placed upon the outer edge of
85 the outside arms in such a way that when the ends of the latter are moved toward each other the intervening arms are moved into contact with the ends of the block *e*. The forward ends of the caliper-arms project beyond the case, as shown, and are provided upon the ends, preferably, with knobs *m* or their equivalent, so as not to cause injury or pain to the person to whom they are applied. The opposite ends are provided with up-
95 wardly-projecting pointed pins *n*, Figs. 2 and 3. Stationary pins *o o* are also secured in the rear portion of the case and sustain the same positional relation to the pins *n* that the block *e* does to the knobs *m*.

A pad *p*, of cork, leather, or other suitable material, is attached to the inner face of the lid, so that when the lid is closed the pins project therein. By raising the lid and inserting a piece of paper *q* between it and the pins and then closing the lid the pins are caused to puncture the paper, the position of the punctures corresponding to those of the arms in which the pins are placed. Inasmuch as the relative position of the pins must always correspond to that of the knobs upon the opposite ends of the arms it follows that the punctures made by the former may be taken as an exact registration of any given contour indicated by the relative positions of the knobs. For example, assuming that the angle of a given surface is to be determined, which is represented by the dotted lines shown in Fig. 2, the caliper-arms are first moved to a normal position toward each other, and then the balls are pressed against the outer surface of the object until the foremost part of the object touches the stop *e*. The instrument is then withdrawn and a register made by puncturing the paper in the manner described. Such a registration is indicated in Fig. 4. It is obvious that if the caliper-arms should first be moved toward each other and then that the balls should be placed against the nose-bridge of a person and pressed until the part *e* were in contact with the crest of the nose the positions of the pins would indicate the exact contour of the nose, thereby affording data by which to shape a spectacle-bridge. While I prefer to use the pins for making the registration, it is obvious that it may be accomplished in various ways—such, for example, as by pressing the knobs flatwise upon carbon-paper, wax, or other equivalent surface.

In Fig. 5 I have shown a modification of said invention, in which the forward end of the case is shown to be hinged at *r* to any well-known form of spectacle trial-frame *s*, the points of juncture being such that the notch in the front of the caliper-case may span the nose of the one to whom the trial-frame is applied. A protractor-scale *t* is rigidly attached to the case *a*, and a pointer *u* is arranged to project horizontally from the trial-frame. When the case *a* is in a position at right angles to the line of the nose, the reading is taken from the scale, which indicates the proper angle of divergence from the vertical at which the nose-bridge of the spectacles should be placed.

Having thus described my invention, I claim—

1. An instrument of the class described consisting of a number of caliper-arms of different lengths pivoted upon a common axis, and means for registering the contour indicated

by the relative positions of said caliper-arms, substantially as described.

2. An instrument of the class described consisting essentially of a series of pivoted caliper-arms arranged in pairs of different lengths, each arm being provided with a pin upon the end opposite the caliper end, whereby when a given surface is calipered, the pins may be caused to assume positions indicating a diagram corresponding to the contour of the surface calipered, substantially as described.

3. An instrument of the class described consisting essentially of a series of caliper-arms pivoted at a relatively corresponding point between the ends, said arms being arranged in pairs, the pairs being of different lengths, each of said arms being provided with an upwardly-projecting pin upon the end opposite the caliper end in combination with means for taking a paper or other impression from said pins, substantially as described.

4. The combination in an instrument of the class described of the centrally-pivoted caliper-arms *i*, provided with the contact-knobs *m* upon one end, and the pins *n* upon the other, means for securing said arms by frictional contact upon the pivoted point whereby each may be actuated independently of the others, and means, such as a hinged lid lined with a yielding material, for taking a paper or other impression from said pins, substantially as described.

5. An optician's instrument for the purpose set forth, consisting of a series of pairs of pivoted caliper-arms having pins or equivalent registering devices upon the ends opposite the caliper ends, means for maintaining said arms in whatever relative position they may be set by contact with the calipered surface a stationary stop for engaging one point upon the calipered surface, and stationary pins upon the opposite side of the pivotal point from said stop and holding a corresponding positional relation to the pins that the stop holds to the testing ends of the caliper-arms, substantially as described.

6. The combination of an instrument of the class described consisting of a series of calipers and a suitable frame with a spectacle testing-frame and means for indicating the angle of variation of the caliper-frame from a given predetermined line, substantially as described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 15th day of January, 1898.

SILAS W. GRAY.

Witnesses:

D. H. FLETCHER,
FLORENCE KING.