

No. 701,526.

Patented June 3, 1902.

HAWLEY C. WHITE & HARRIE C. WHITE.
STEREOSCOPE.

(Application filed Apr. 16, 1901.)

(No Model.)

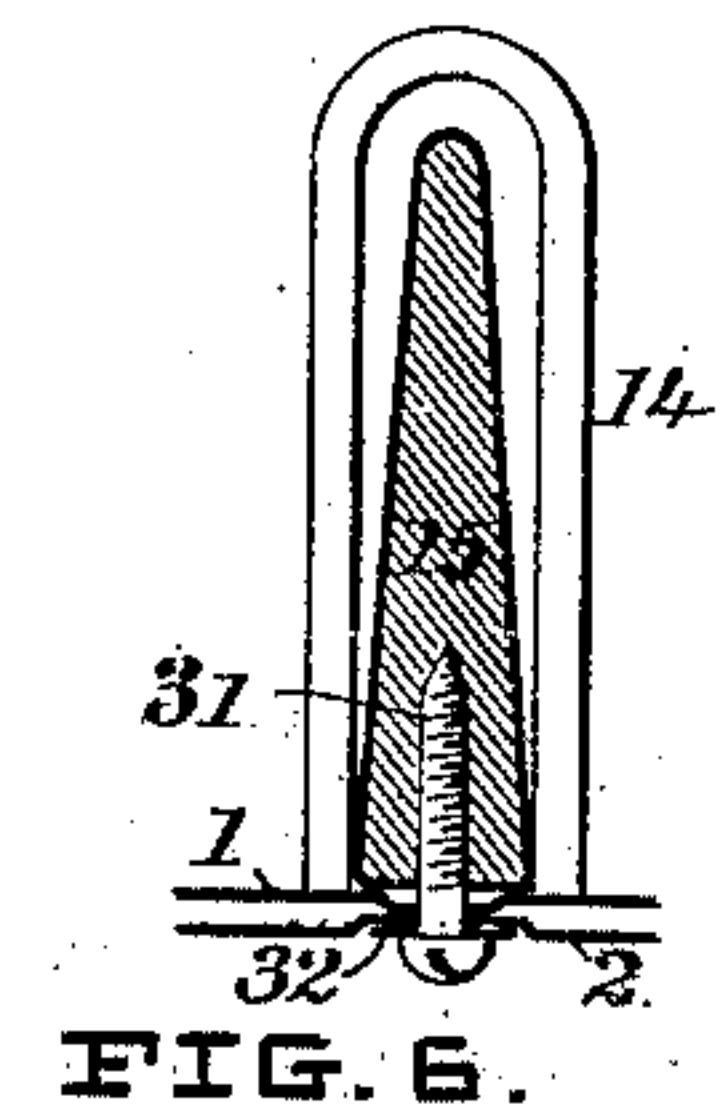
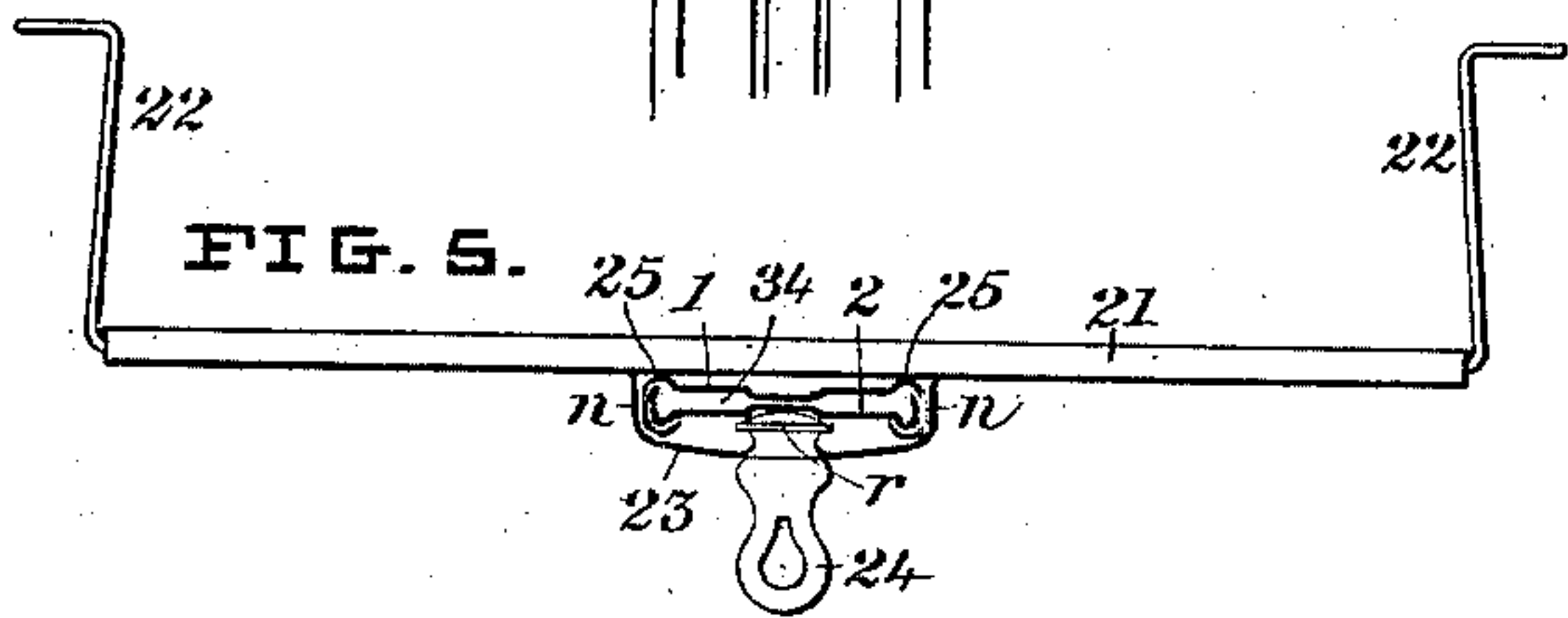
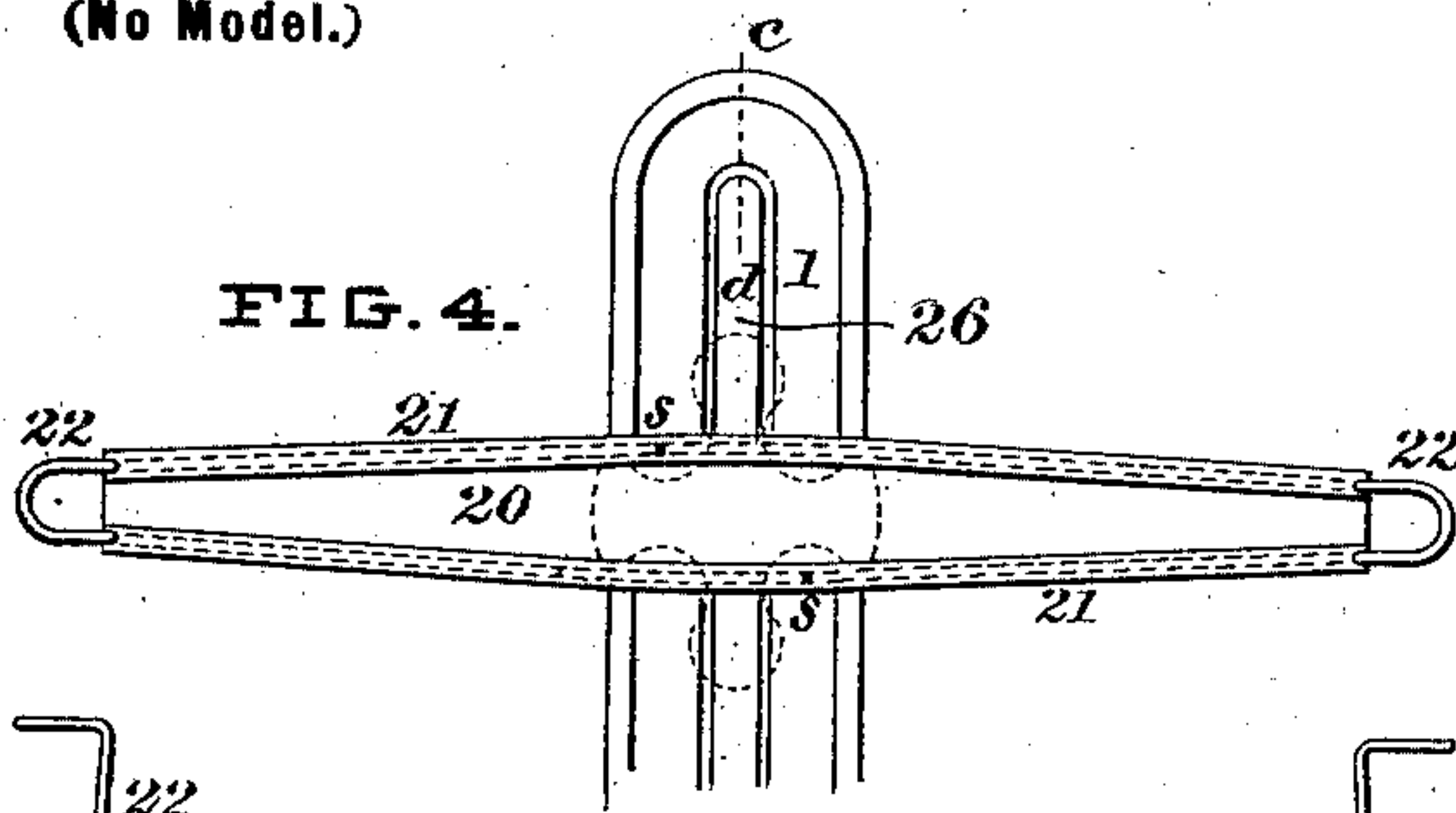
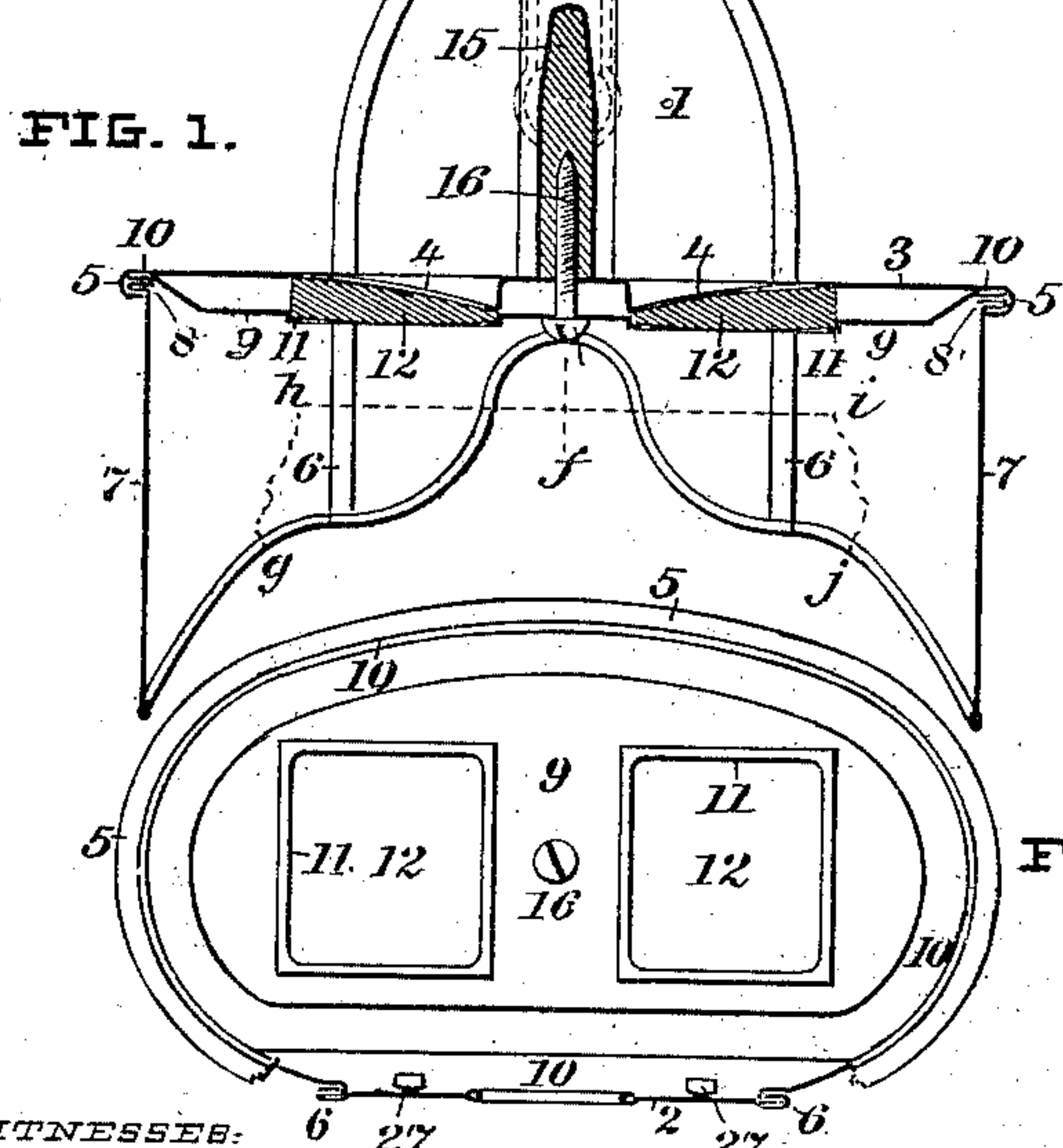


FIG. 1.



WITNESSES:

Charles H. Houghton
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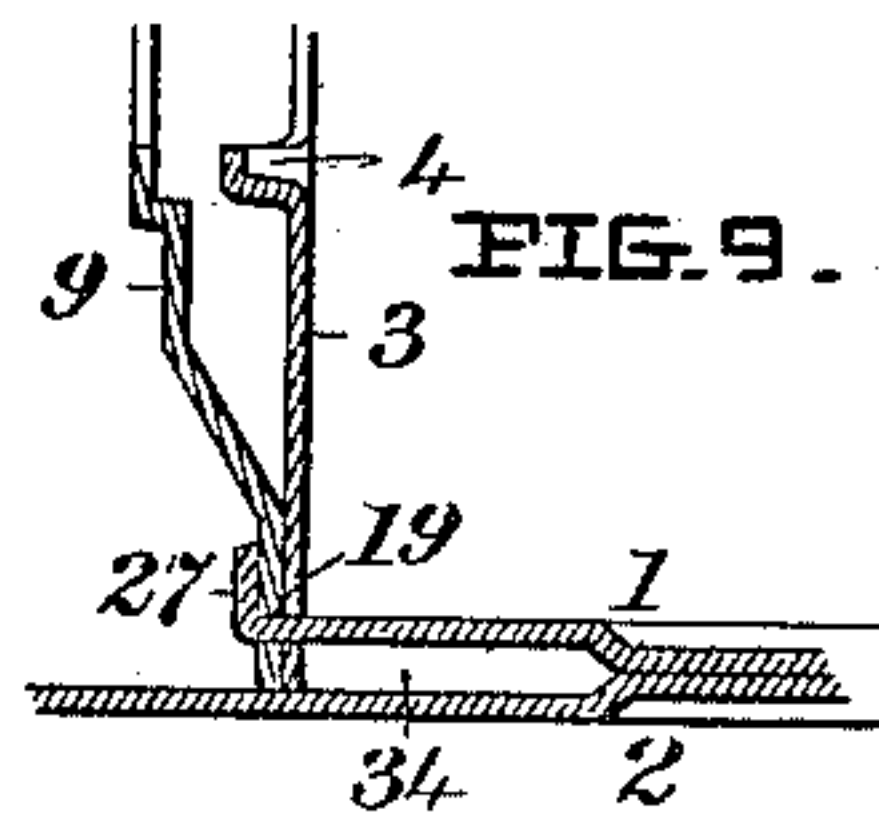


FIG. 9.

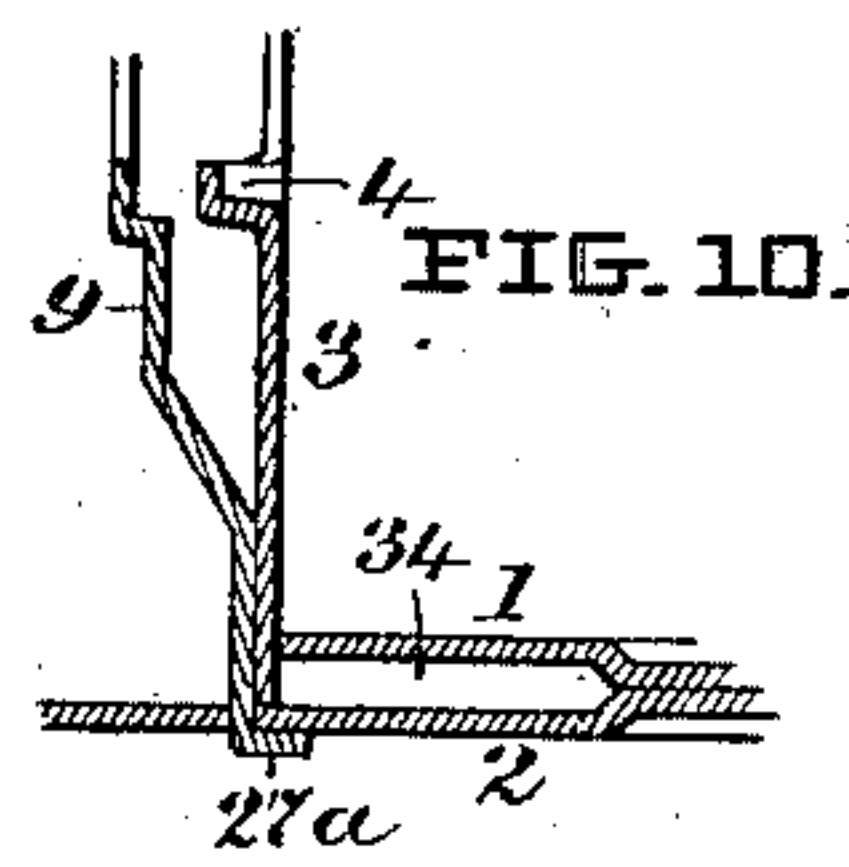


FIG. 10.

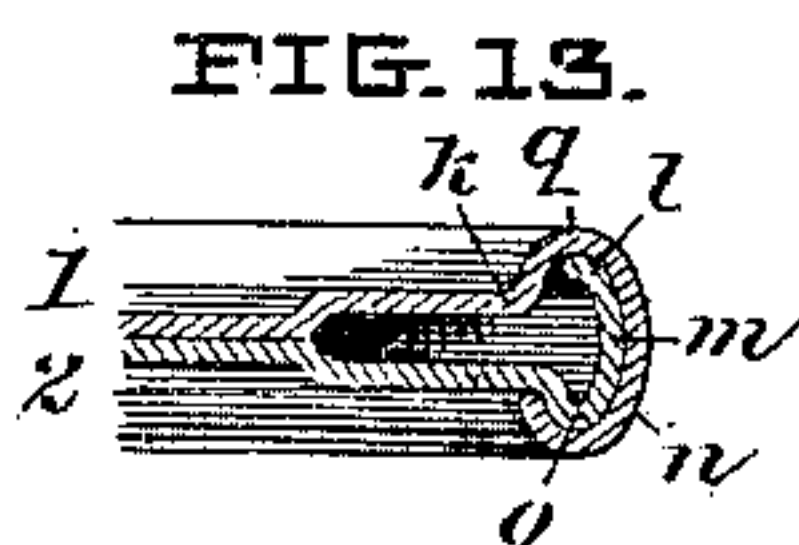


FIG. 13.

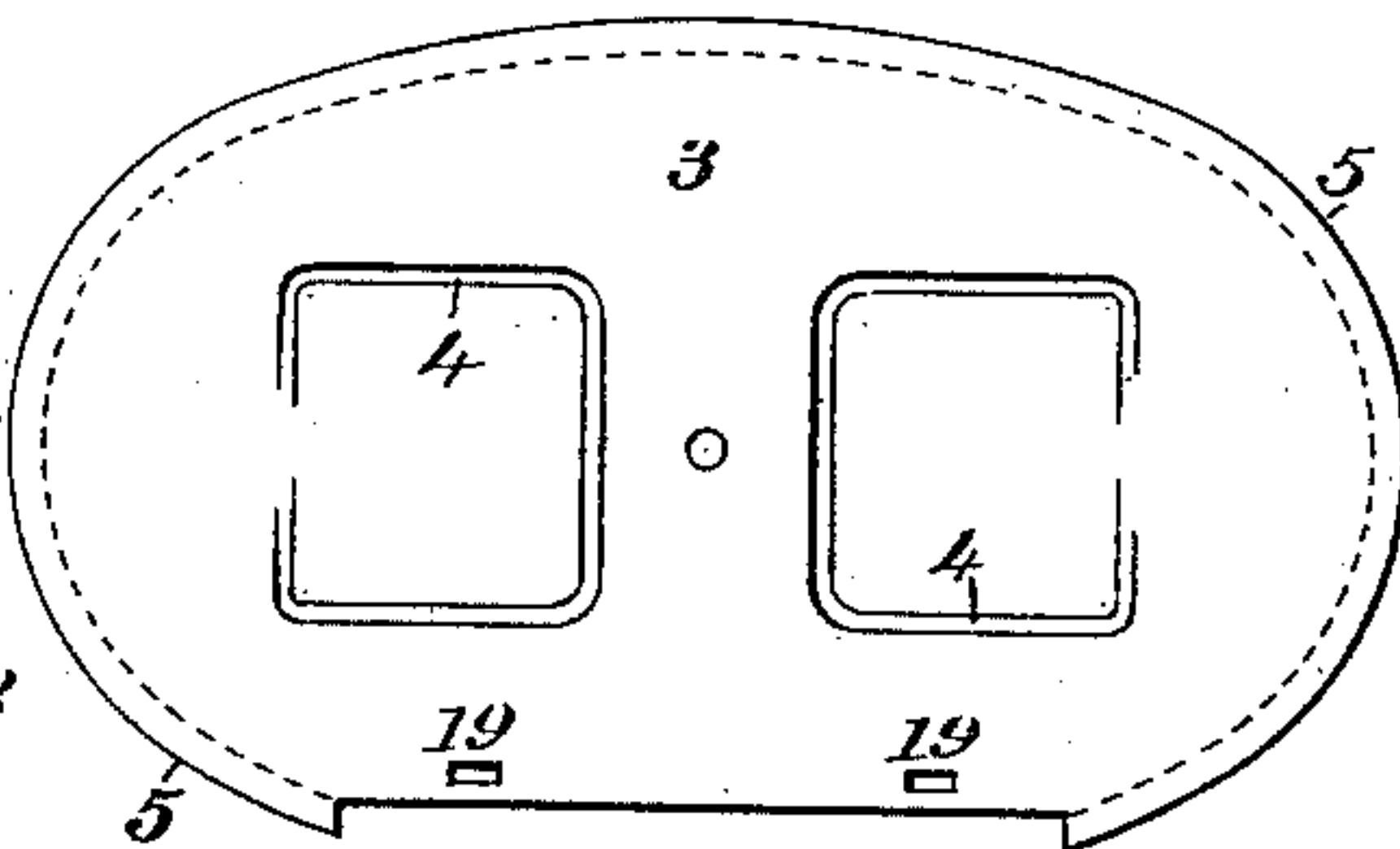


FIG. 8.

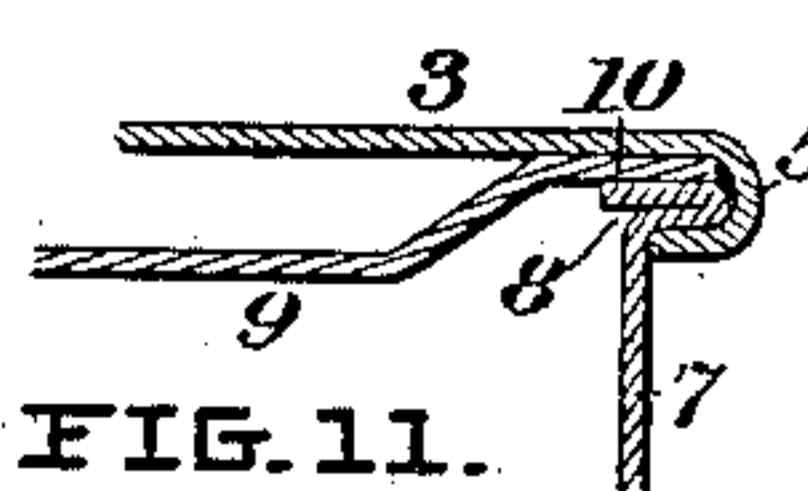


FIG. 11.

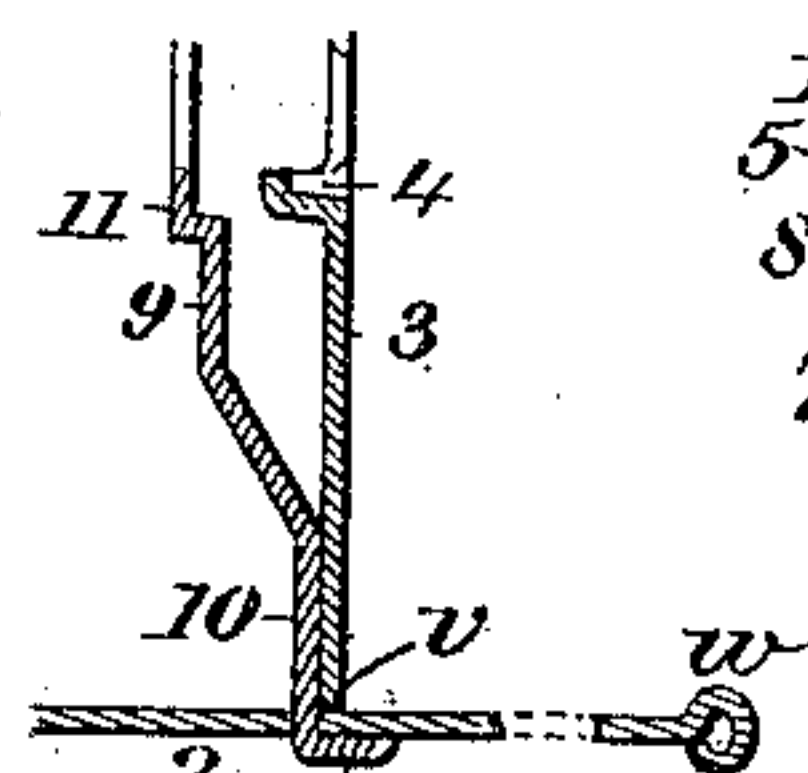


FIG. 12.

FIG. 2.

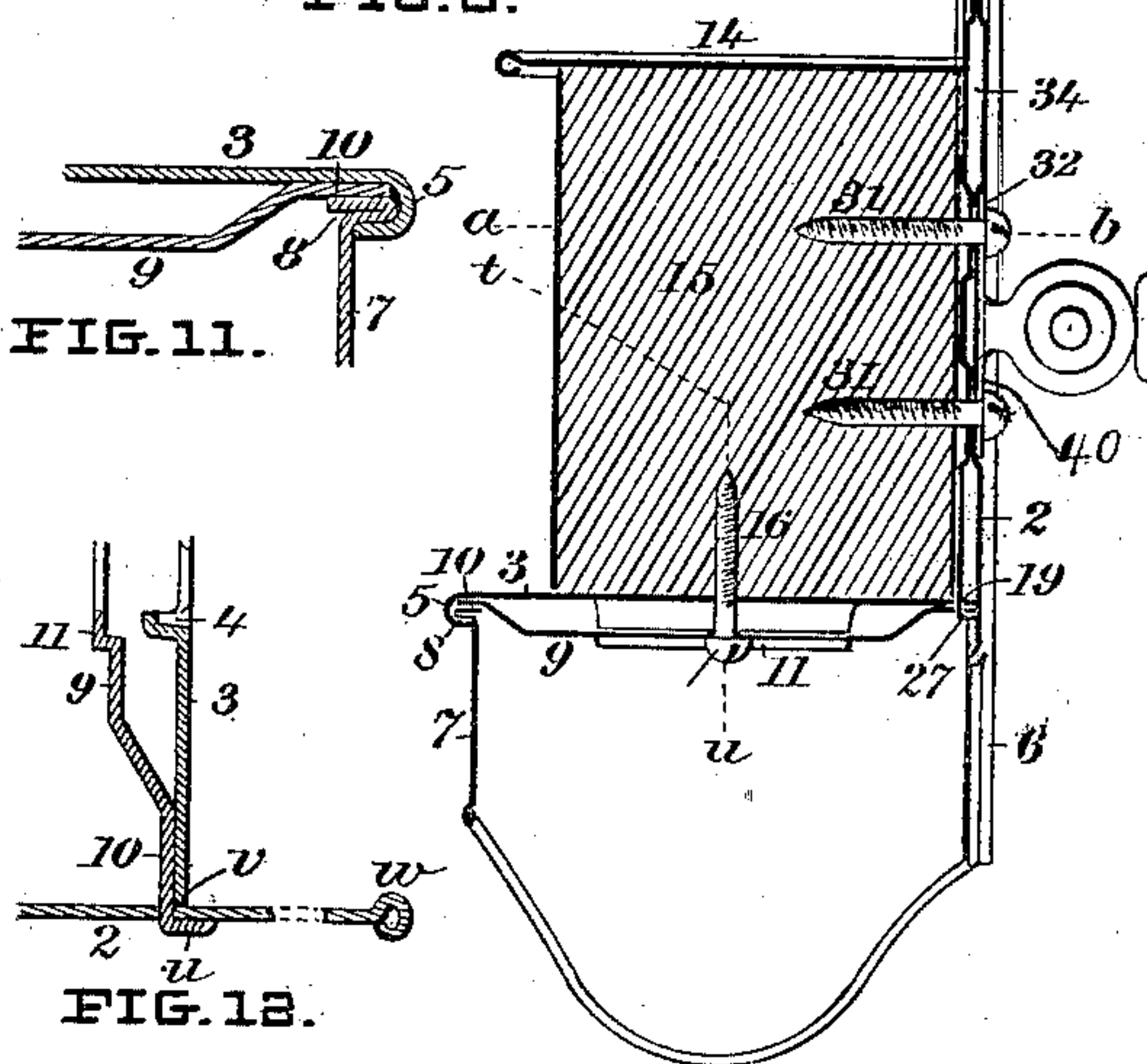


FIG. 3.

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UNITED STATES PATENT OFFICE.

HAWLEY CASTLE WHITE AND HARRIE CLINTON WHITE, OF NORTH BENNINGTON, VERMONT, ASSIGNORS TO H. C. WHITE CO., OF NORTH BENNINGTON, VERMONT, A CORPORATION OF VERMONT.

STEREOSCOPE.

SPECIFICATION forming part of Letters Patent No. 701,526, dated June 3, 1902.

Application filed April 16, 1901. Serial No. 56,061. (No model.)

To all whom it may concern:

Be it known that we, HAWLEY CASTLE WHITE and HARRIE CLINTON WHITE, citizens of the United States, and residents of the village of North Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Stereoscopes, of which the subjoined description, in connection with the accompanying sheet of drawings, constitutes a specification.

The invention relates to metallic stereoscopes; and it consists in improved methods of construction and combination of the several members of hand-stereoscopes, although some features of the invention may have more extensive application.

The drawings fully illustrate the invention, wherein—

Figure 1 shows a partial plan of a stereoscope and a horizontal cross-section of the lens-frame and hood and an irregular section of the septum, taken on the line *t u* of Fig. 3. Taken in connection with Fig. 4 it shows a complete plan of the shaft and picture-holder. Fig. 2 is an elevation of the front of the lens-chamber, showing a part of the shaft broken away on the dotted line *g h i j* of Fig. 1. Fig. 3 is a vertical longitudinal section of the entire stereoscope, taken through the axis of the shaft, as on the line *c, d, e, and f* of Figs. 1 and 4. Fig. 4 is a plan view of the picture-holder in position on the end of the shaft. Fig. 5 is a front view of the picture-holder and shows a transverse section of the shaft and a front elevation of the spring attached to the picture-holder, showing its mode of coöperation with the longitudinal channel on the under side of the shaft. Fig. 6 shows a transverse section of the septum, taken on the line *a b* of Fig. 3. Fig. 7 shows a bottom view of the septum. Fig. 8 is an elevation of the back side of the lens-holder. Figs. 9 and 10 show different modes of joining the shaft and lens-holder. Fig. 11 is a cross-section through the joint which unites the hood and lens-frame. Fig. 12 shows a method of joining the lens-frame with a shaft made with one plate. Fig. 13

shows a transverse section through the interlocked margins of the shaft, taken on the line *c d* of Fig. 4.

The members which in this invention collectively make up the stereoscope are the shaft, lens-frame, hood, septum, picture-holder, and handle, although the latter is not a necessary element of a stereoscopic combination.

Our invention resides in the improvements we have made in each or all of these members separately considered and in the improved methods of joining the several parts. These improvements have been made especially with reference to the use of aluminium and analogous metals which are manipulated with difficulty, as the material from which the instrument has been almost wholly constructed.

The claims fully disclose and explain the several features of invention.

All parts of the stereoscope are made of aluminium except the filling for the septum, the wires of the picture-holder, the face-plate of the lens-holder, which may or may not be made of aluminium, the handle, and the handle-bracket, the screws and rivets with which the parts may be fastened together, and the picture-holder spring.

The shaft.—The shaft may be made with one or two plates. We have shown both constructions, as in Figs. 3 and 12. Two plates are preferable, although a good construction can be made with one, our other improvements being capable of combining with either without material change. The upper plate is shown at 1 and the lower plate at 2. Both are shaped between dies, and preferably the under plate has sunken depressions, as at 33 and 40, Fig. 3, for the lips of the picture-holder spring and the handle-bracket, respectively. These depressions are sunk deep enough to meet the opposite plate. The whole amount of this depression may be formed in one plate or it may be divided, the opposite plate being similarly countersunk, so that the sunken portions will contact midway between the planes of the two plates. The latter construction is preferred, as it

leaves clear space between the two plates, and thus they come to possess the stiff properties of a tube. Where one plate is used for a shaft, its margin is finished with a rolled tubular edge, as at *w*, Fig. 12. This is substantially the same as the rolled edge shown at *n*, Fig. 13. Where two plates are used, the edges of the plates are first struck up, then assembled, and closed under a press, so as to present in cross-section the joint shown in Fig. 13. It possesses these properties and peculiarities: The under plate 2 has turned on its margin by a proper machine or tool an outwardly-turned rib *o* and a transversely-turned flange *m*. The upper plate 1 has a similar outwardly-turned rib *g* and an extended flange-lip *n*, which in the process of closing the joint under pressure is wrapped down around the flange *m* of the other plate, its free margin being brought down into the angle at the base of rib *o*. In doing this the edge 1 of flange *m* offers resistance to the bending or folding-over process, so that as a result the flange *m* becomes a stiffening web or strut within the tubular edge thus formed, which renders the hollow tubular edge so formed exceedingly strong. By forming the end of the shaft on a curve, as at *c*, the shaft is much better adapted to resist torsional strain, a qualification necessary to maintaining the picture-holder in correct adjustment with reference to the two lenses, as is well understood by opticians. One of the shaft-plates at its front end terminates at the lens-holder, but has two tongues 27, which are designed to pass through slots 19 19, Fig. 8, in the back plate and corresponding slots in the front plate of the lens-holder and are then bent down to lock the shaft to the lens-holder, or the upper plate 1 may be stopped off at the lens-holder and tongues may be provided on the front plate of the lens-holder, as seen at Fig. 10, to connect with the shaft. We regard these expedients as equivalents, and other modes of connection could doubtless be devised of an equivalent nature. The front extension has its edge finished with a narrow folded hem to render contact with the nose and face agreeable, and its margins are joined to the ends of the hood by a common locked clench, as seen at 6 in Fig. 2.

The lens-frame.—This member consists of two metallic plates, the back plate 3 and the front plate 9. Both are struck up between dies and have lens-openings disposed in apposition to each other. The back plate has a flange-groove 5 turned on its periphery to receive and hold the edge of the front plate and the flanged edge of the hood. It has two flanged rims 4 4, pressed inwardly toward the interior of the hood, which are sloped or inclined at an angle to correspond with the back sides of the lenses 12 12, as shown in Fig. 1. Its under side is gapped, as seen in Fig. 8, to receive the shaft upon which it rests its flanged rim, meeting the beaded rim of the shaft. The front plate 9 has two shallow

sockets or seats for the lenses 11 11, upon the inner flanged edges of which the lenses rest. These sockets are sunk only deep enough that their edges will form shoulders against which the edges of the lenses may contact, so that they will be accurately held in position and lateral displacement be prevented. The central portion of this plate is elevated above the rim a distance about equal to the thickness of the thick edge of the lenses, but not more than that. Its edge terminates in a flat rim 10, which enters the flanged groove of the back plate. In practice when the lenses are in position and the parts are properly assembled a screw 16 is passed through the centers of both lens-plates and is screwed into the core of the septum, whereby the lens-frame is not only securely fastened to that member, but the middle of the front plate is drawn down, so as to bear firmly against the surfaces of the lenses, and the lenses are thus securely gripped between the two plates, so that no derangement is thereafter possible and they cannot be loosened. This is a valuable feature, as in the manufacture of stereoscopes it has always been a difficult task to accurately set the lenses and afterward permanently hold them in correct adjustment. As before stated, the front plate is provided with means in connection with the shaft for fastening the two together, as by tongues and slots, as shown or otherwise.

The hood.—This member consists of a single metallic plate bent to the proper elliptical shape to correspond with the contour of the lens-frame. Its back edge has a turned-up flange 8, which is fitted to enter and be confined by the flange-groove 5 of the back plate. Flange 8 may be either doubled upon itself, as here shown, or left single in thickness. The former construction is better, as it confers additional stiffness upon the structure. Its ends are fitted to interlock with the flanged edges of the shaft, as at 6 6, and, with the shaft, forms a dark chamber, as the front edge of shaft and hood are shaped to fit the nose and cheeks of the user, as shown. Its edge is finished with a folded edge to render it smooth and agreeable to the face.

The septum.—The novelty of this member consists in its being made with an external shell or sheath 13 of metal plate filled with a penetrable core 15 of wood or analogous material which will hold a screw. This sheath has its bottom part formed or divided on a line substantially as shown in Fig. 7, so that two overlapping flaps are obtained wide enough to take in a screw. The slip 14 at its end is a single piece of metal having a tubular beaded edge, as seen in cross-section in Fig. 7, with a circular top, as in Fig. 6. This renders it strong and incapable of being twisted. The septum and slip are connected by tongues and slots similar to the other joints (not shown) or in any suitable way. They are fastened to the shaft by screws 31 31, Fig. 3, which pass through the shaft from

the under side. The handle-bracket is held by the same screws. This mode of fastening is old and well understood.

The picture-holder.—This member is shown in Figs. 4 and 5. It consists of a single plate of metal having its edges fitted with the tubular beaded finish, as seen in cross-section in Fig. 3. The wire guards 22 22 for supporting the picture in its upright position are shown partially in dotted lines in Fig. 4. Their projections above the cross-bar 20 are of the usual form; but each has a long and a shorter tang, which tangs are carried and held in the interior of the tubular edge of the bar, being folded and pressed in in the process of forming the beaded edges of that part. The tangs are arranged substantially as shown, so that the end of each long tang shall bridge the joint formed by the ends of the tangs in the opposite bead. This stiffens the whole structure materially and holds the wire guards immovably. On the under side of the cross-bar 20 is attached a spring-clip 23. This has two spring-lips *r r*, which bear against the under side of the shaft in the long recess 33. By reason of these lips finding their seat in this recess the rectangular position of the cross-bar on the shaft is preserved.

The assemblage of the parts is simple and obvious to any metal-worker; but, in fact, when the parts have been loosely assembled they are finally closed on a machine under great pressure, whereby all joints are closed in the firmest manner and without defacement of any kind, and so that all finished stereoscopes will be uniform in make and appearance.

We therefore claim as our invention, and desire to secure by Letters Patent, the following:

1. As a constituent member of a stereoscope, a shaft consisting of an upper and an under metallic plate with a space between them, the margin of one of said plates being fashioned with an upturned semitubular flange and the margin of the other with a substantially tubular flange which closely envelops the semitubular flange of the former plate, the inclosed flange thus practically forming a strut within the tubular structure so constituted which stands transversely to the plane of the shaft, substantially as specified.

2. As a constituent member of a stereoscope, a shaft consisting of two metallic plates with a space between them, having their margins interlocked by a joint whereof the edge of one member has a flange upturned transversely to the plane of the shaft, and having a longitudinal depression in one plate sunk to a depth to contact with the inner surface of the other plate, substantially as specified.

3. As a constituent member of a stereoscope, a shaft consisting of two metallic plates having their margins interlocked by a joint whereof the edge of one member has a flange upturned transversely to the plane of the shaft, both plates having sunken depressions

oppositely disposed so as when assembled to contact with each other, substantially as specified.

4. As a constituent member of a stereoscope, a shaft consisting of two metallic plates having margins interlocked by a joint whereof the edge of one member has a flange upturned transversely to the plane of the shaft, with a space between said plates, one of said plates projecting forwardly of the lens-frame and having provisions for connecting with the hood, and the other having provisions to receive and connect with the lens-frame, substantially as specified.

5. As an improved member of a stereoscope, a lens-frame consisting of a metallic face and a metallic back plate, the face-plate being provided with shallow flanged sockets to receive and maintain correct lateral position of the lenses; the back plate having forwardly-projecting inclined flanged rims to contact with the back sides of the lenses and in apposition with the aforesaid sockets; means for holding said plates in correct conjunctive position, and means for drawing them together so as to bind the interposed lenses immovably in their positions in the frame.

6. As an improved member of a stereoscope, a lens-frame consisting of a metallic face-plate, the main central field of which is struck up above the plane of its margin approximately the thickness of the lenses, provided with shallow flanged sockets to receive and maintain correct lateral position of the lenses; in combination with a back plate having forwardly-projecting inclined flanged rims to contact with the back sides of the lenses and in apposition with the aforesaid sockets; and having also a marginal flanged groove to receive the edges of said plates, and means in connection therewith for holding said hood and plates in conjunction and means for binding said plates to each other.

7. In combination with a shaft consisting of two metallic plates marginally locked together with a space between them; of a lens-holder consisting of a metallic back plate having a peripheral-flanged groove, and a metallic face-plate with provisions between said back and face plates for receiving and holding the lenses in correct position; means for locking and confining said shaft and lens-frame together; and a hood flanged to connect with the groove of the back plate and locked to the shaft, substantially as specified.

8. The combination in a stereoscope, with the shaft and lens-frame of a septum consisting of a core of material suitable for holding a nail or screw-thread, and a metallic sheath inclosing the same provided with a perforated flange or flanges which overlap the core, and fastening devices adapted to coöperate with said perforated flanges for attaching the septum to the shaft, substantially as specified.

9. As a constituent member of a stereoscope, a picture-holder consisting of a plate of metal having a tubular bead extending

along its side edges, said tubular feature containing and holding by their tangs wire guards for supporting the pictures, substantially as specified.

5 10. The described picture-holder consisting of a metallic plate having tubular beaded edges and card-supporting wire guards, the ends of each of which are of differential length so that the long end of one guard shall break
10 joint over the opposing contiguous ends of the guards, substantially as specified.

11. The combination in a stereoscope, of a shaft provided with a rib along the margins of its upper side, with a picture-holder in the
15 nature of a cross-bar, the margins of the under side of which have similar ribs, whereby the holder contacts with the shaft only at the points where the bar crosses the ribs of the shaft; whereby the surfaces of the web of the
20 shaft and holder are protected against wear and abrasion due to sliding one over the other, substantially as specified.

12. In a stereoscope the means for uniting the margins of the two plates forming the shaft, consisting in the raised rim and transversely-
25 turned flange-lip of the inner plate edge, in combination with the enveloping lip of the edge of the outer plate, the latter lip being bent outwardly from its web, then across and
30 over the edge of the inner lip, thence around the latter so that its edge closes firmly into the angle of the inner plate formed by the outward bend of the inner lip; whereby the
inner lip acts as a stiffening-strut within the tube formed by the curvature of the outer
35 lip, substantially as described.

In witness whereof we have hereto subscribed our names, at North Bennington, Vermont, this 10th day of April, A. D. 1901.

HAWLEY CASTLE WHITE.
HARRIE CLINTON WHITE.

Witnesses:

A. R. WHIPPLE,
FRANKLIN SCOTT.