

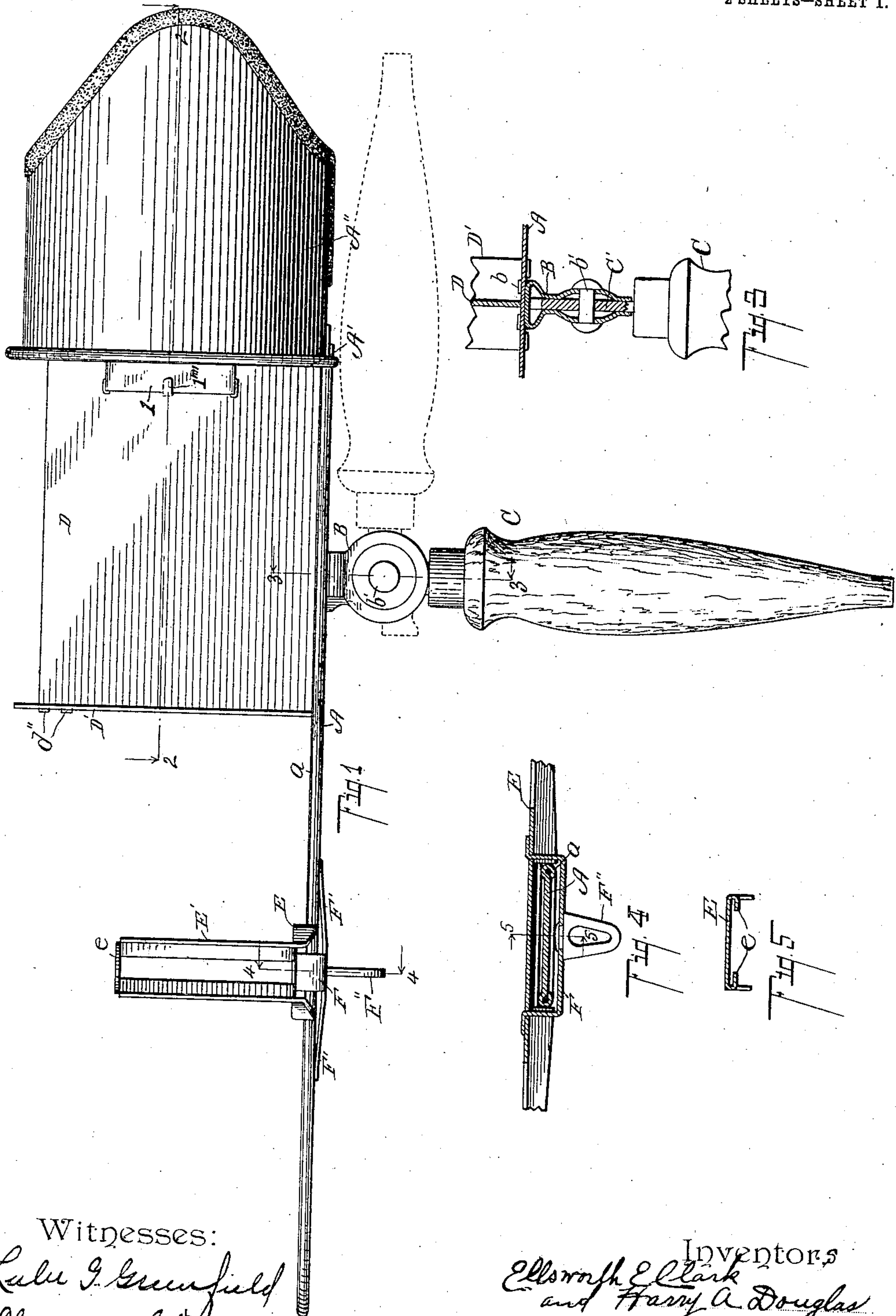
No. 880,481.

PATENTED FEB. 25, 1908.

E. E. CLARK & H. A. DOUGLAS.  
STEREOSCOPE.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.



Witnesses:  
Lulu G. Greenfield  
Clara A. Saben

Inventors  
Elliott H. Clark  
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By Chappell & Earl  
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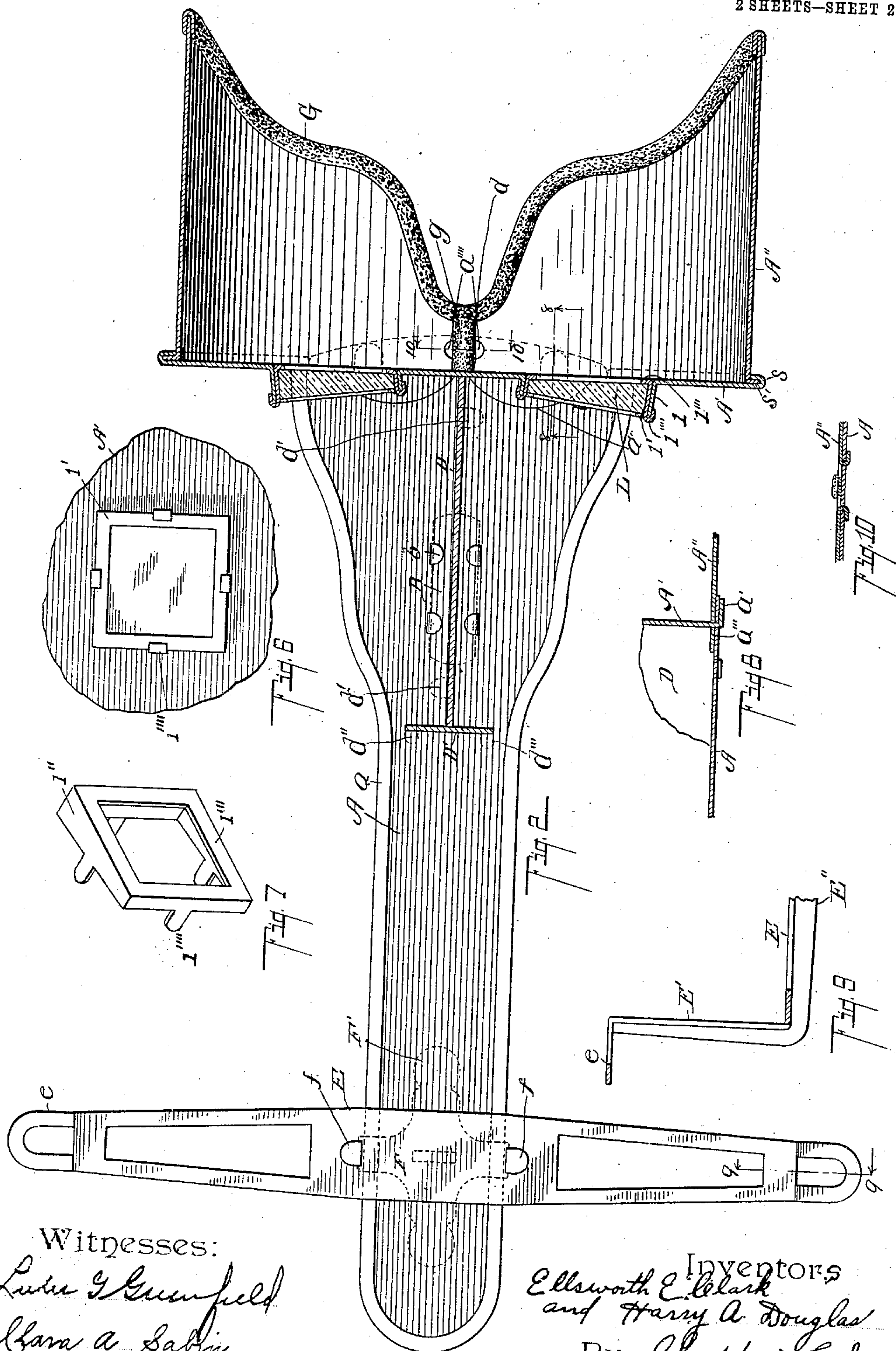
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2 SHEETS—SHEET 2.



Witnesses:  
*Lewis G. Greenfield*  
*Sam A. Sabin*

Inventors  
*Ellsworth E. Clark*  
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By *Chapman & Earl*  
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# UNITED STATES PATENT OFFICE.

ELLSWORTH E. CLARK AND HARRY A. DOUGLAS, OF KALAMAZOO, MICHIGAN, ASSIGNORS  
TO ROYAL SUPPLY COMPANY, OF CHICAGO, ILLINOIS.

## STEREOSCOPE.

No. 880,481.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed May 18, 1906. Serial No. 317,590.

*To all whom it may concern:*

Be it known that we, ELLSWORTH E. CLARK and HARRY A. DOUGLAS, citizens of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Stereoscopes, of which the following is a specification.

This invention relates to improvements in stereoscopes.

The objects of this invention are: first: to provide in a stereoscope an improved construction and arrangement of parts, which may be formed of sheet metal and assembled without the use of rivets or solder; second: to provide an improved stereoscope made of sheet metal which is light in weight and attractive in appearance and, at the same time, is very rigid and durable; third: to provide in a stereoscope an improved lens-holder; fourth: to provide in a stereoscope an improved slide or picture holder; and fifth: to provide in a stereoscope an improved shaft.

Further objects, and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure 1 is a side elevation of my improved stereoscope, the handle being shown in its collapsed position by the dotted lines; Fig. 2 is a longitudinal section of my improved stereoscope, taken on a line corresponding to line 2—2 of Fig. 1; Fig. 3 is a detail transverse section taken on a line corresponding to line 3—3 of Fig. 1, showing the structural details of the handle; Fig. 4 is a detail transverse section on a line corresponding to line 4—4 of Fig. 1, showing the structural details of the picture-holder or slide and of the shaft; Fig. 5 is a transverse section on a line corresponding to line 5—5 of Fig. 4, showing the picture holder removed from the shaft, the part F being omitted; Fig. 6 is a detail elevation showing a front view of one of the lens holders, with the lens in position therein; Fig. 7 is a perspective view of the lens mat

or retainer 1". Fig. 8 is a detail section taken on a line corresponding to line 8—8 of Fig. 2, showing the details of the hood, shaft and lens plate; Fig. 9 is an enlarged detail section taken on a line corresponding to line 9—9 of Fig. 2, showing the structural details of the picture-holder or slide; and Fig. 10 is a detail section taken on a line corresponding to line 10—10 of Fig. 2, showing details of the hood and shaft connection.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawing, the shaft A is formed from a plate of sheet metal preferably having a continuous bead *a* formed on its side and outer edges. This bead is what is known to sheet metal workers as a "wire-bead",—that is, it is round, as though it were rolled over a wire. This bead adds very materially to the strength of the shaft, and also to its appearance. The lens-plate A' is also formed of sheet metal. This lens-plate is provided with an intumed-edge *s* to form a seam groove for the out-turned flange *s'* on the hood A'', the hood being also formed of sheet metal or other suitable thin material. The shaft A projects under the hood and lens-plate, as does also the bottom of the hood, the hood being provided with forwardly-projecting portions or extensions *a'''*. The lens-plate is provided with retaining tongues *a'* on its lower edge, which are arranged through suitable slots in the hood extensions and shaft, and folded or clamped down thereon, as clearly appears in Fig. 8.

The hood is preferably formed of one piece, with its edges brought together on the underside. The edges of the hood are provided with retaining tongues *a''''* which are inserted through suitable slots provided therefor in the rear end of the shaft, and turned up against the same, as clearly appears in Figs. 2 and 10. The lens plate and hood are by this means firmly secured to each other and to the shaft. By arranging the shaft so that it projects rearwardly of the lens plate and providing the hood with the forwardly-extending members *a'''*, and securing the septum or division plate to the lens plate and to the shaft, the parts are rigidly braced. The septum or division plate is formed of sheet metal and is pro-



vided with retaining tongues  $d$  on its rear edge which are arranged through suitable slots or openings in the lens plate and clamped down thereon. On the lower edge  
5 of the septum or division plate are tongues  $d'$  which are arranged through suitable slots in the shaft.

At the outer end of the plate D is a cross-piece D' to which the plate is secured by suitable tongues  $d''$  arranged therethrough. On  
10 the lower end of the cross-piece are tongues  $d'''$  arranged through the shaft. The parts are thus firmly held together and braced so that the structure is very rigid and at the  
15 same time the parts are simple in structure and are assembled without the aid of rivets or solder, the work of securing the parts together being practically all machine work.

The rear edge of the hood is conformed to  
20 fit the face of the user. Its rear edge is also preferably provided with a covering G of felt. This covering is preferably arranged to overlap the edges of the hood at the underside as at  $g$ , thereby preventing the entry  
25 of light at this point and avoiding the necessity of careful fitting to bring the edges of the hood into perfect contact.

The lens-plate is provided with projecting lens-sockets  $l$  which are stamped out there-  
30 from. These sockets are of the approximate size and shape of the lens, which they are to receive and are provided with inwardly-projecting flanges  $l'$  at their outer edges. The lens as L is placed in these and is secured  
35 therein by the retainers or mats  $l''$ . These mats are provided with a flange  $l'''$ , to overlap the edge of the lenses, and with tongues  $l''''$  which are inserted through suitable slots in the lens-sockets and secured by folding  
40 over (see Fig. 2). The lenses are thus securely held in position in a manner such that they may be removed if desired, and the liability of injuring the same in assembling is reduced to a minimum.

The picture-holder E is formed from a piece of sheet metal having its ends turned upwardly to form the picture-receiving arms E', the same being slotted, to receive the picture, and turned outwardly at the upper end as  $e$ .  
50 To add rigidity to the picture-holder its edges are turned down to form flanges, as E''.

To form an opening for the shaft, these flanges E'' are slitted and turned inwardly at  $e'$  (see Fig. 5.). This forms a seat or bearing  
55 for the picture-holder, so that it slides upon the shaft without danger of marring the same.

A retaining-plate F is provided, the same being secured to the picture-holder E by means of suitable tongues  $f$  formed on its  
60 ends, which are arranged through the picture holder and folded down thereon. The retaining-plate F is provided with spring-fingers F' formed integral therewith, the same engaging or bearing against the under-  
65 side of the shaft. A downwardly-projecting

finger piece F'' is carried by this piece F'. I thus secure a picture-holder which may be formed of sheet metal, which is very light and graceful in appearance and, at the same time, is strong and rigid.

A handle C is pivotally secured to the shaft. This is accomplished by means of the hanger B which is secured to the shaft by means of the tongues  $b$  thereon. These tongues  $b$  are inserted through slots in and folded down  
75 upon the top of the shaft. The shank C' of the handle is secured by the pivot  $b'$ .

By arranging the parts as I have illustrated and described, I provide a stereoscope which is very attractive in appearance and is,  
80 at the same time, very economical to produce, it being possible to assemble the parts thereof very largely by machine-work.

I have illustrated and described my improved stereoscope in detail in the form preferred by me on account of its structural simplicity and economy. I am aware, however, that it is capable of being varied considerable in structural details, without departing from my invention.

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

1. In a stereoscope, the combination of a shaft formed of a single piece of sheet metal, having a continuous bead formed on its side and forward edges; a hood formed of a single piece of sheet metal, having an outwardly turned flange on its forward edge and forwardly projecting extensions on its under side, resting on said shaft, said hood having retaining tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having its edge folded or seamed over the out-turned flange on said hood, and having retaining tongues on its lower edge, arranged through said shaft and said extensions on said hood; a sheet metal septum having retaining tongues on its bottom and rear edges, arranged through said shaft, and lens-plate, for the purpose specified.

2. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood, having a forwardly projecting extension on its under side, resting on said shaft, and retaining tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum; a sheet metal cross-piece therefor arranged at the forward end thereof, having retaining tongues on its lower end, arranged through said shaft, said septum having retaining tongues on its bottom, forward and rear edges, arranged through said shaft, lens-plate and cross-piece; lens frames, consisting of suitable lens sockets punched up from said lens-plate, said sockets having inturned flanges at their outer edges; and retainers



having inturned flanges at their rear edges and retaining tongues on their forward edges, arranged through the flanges on said lens-sockets, for the purpose specified.

5 3. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under side, resting on said shaft, and retaining  
10 tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum; a  
15 sheet metal cross-piece therefor arranged at the forward end thereof, having retaining tongues on its lower end, arranged through said shaft, said septum having retaining  
20 tongues on its bottom, forward and rear edges, arranged through said shaft, lens-plate and cross-piece; for the purpose specified.

4. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood, having a forwardly projecting extension on its under side, resting on said shaft, and retaining  
25 tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum having  
30 retaining tongues on its bottom and rear edges, arranged through said shaft and lens-plate; lens frames, consisting of suitable lens sockets punched up from said lens-plate, said sockets having inturned flanges at their  
35 outer edges; and retainers having inturned flanges at their rear edges and retaining tongues on their forward edges, arranged through the flanges on said lens-sockets, for the purpose specified.

40 5. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under side, resting on said shaft, and retaining  
45 tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum having retaining tongues on its bottom and  
50 rear edges, arranged through said shaft and lens-plate, for the purpose specified.

6. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under  
55 side, resting on said shaft, and retaining tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; lens-frames, consisting of  
60 suitable lens-sockets punched up from said lens-plate, said sockets having inturned flanges at their outer edges; and retainers having inturned flanges at their rear edges  
65 and retaining tongues on their forward edges,

arranged through the flanges on said lens-sockets, for the purpose specified.

7. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under  
70 side, resting on said shaft, and retaining tongues on its meeting edges, arranged through said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood, for the purpose specified.

8. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under  
80 side, resting on said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum; a sheet metal cross-piece therefor arranged at the forward end thereof, having  
85 retaining tongues on its lower end, arranged through said shaft, said septum having retaining tongues on its bottom, forward and rear edges, arranged through said shaft, lens-plate and cross-piece, for the purpose  
90 specified.

9. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under  
95 side, resting on said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum having retaining tongues on its bottom and rear edges, arranged through said  
100 shaft and lens-plate, for the purpose specified.

10. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly projecting extension on its under  
105 side, resting on said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum; a sheet metal cross-piece therefor arranged at the forward end thereof, having  
110 retaining tongues on its lower end, arranged through said shaft, said septum having retaining tongues on its bottom, forward and rear edges, arranged through said shaft, lens-plate and cross-piece, for the purpose  
115 specified.

11. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having a forwardly-projecting extension on its under  
120 side, resting on said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and said extension on said hood; a sheet metal septum, having retaining tongues on its bottom and rear edges, arranged through said  
125 shaft and lens-plate, for the purpose specified.

12. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having  
130



a forwardly-projecting extension on its under side, resting on said shaft; a sheet metal lens-plate having a retaining tongue on its lower edge, arranged through said shaft and  
 5 said extension on said hood, for the purpose specified.

13. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood having retaining tongues on its meeting edges ar-  
 10 ranged through said shaft; a sheet metal lens-plate seamed to said hood having a retaining tongue on its lower edge, arranged through said shaft; a sheet metal septum, having retaining tongues on its bottom and  
 15 rear edges, arranged through said shaft and lens-plate, for the purpose specified.

14. In a stereoscope, the combination of a sheet metal shaft; a sheet metal hood formed of a single piece having an outwardly-project-  
 20 ing flange at its forward edge and retaining tongues on its lower meeting edges, said tongues being arranged through said shaft; a sheet metal lens plate seamed over said flange on the forward edge of said hood having a re-  
 25 taining tongue on its lower edge arranged through said shaft, whereby the parts are secured together.

15. In a stereoscope, the combination of a sheet metal lens-plate having a lens-socket  
 30 punched up therefrom, said socket having an inturned flange at its outer edge; and a retainer formed of sheet metal having an inturned lens engaging flange thereon and a

retaining tongue arranged through the flange of said lens-socket, for the purpose specified. 35

16. In a stereoscope, the combination of a sheet metal lens-plate having a lens-socket punched up therefrom, said socket having an  
 inturned flange at its outer edge; and a re- 40 tainer formed of sheet metal having an inturned lens engaging flange thereon and a retaining tongue arranged through said lens-socket, for the purpose specified.

17. In a stereoscope, the combination of a shaft; a slide or picture-holder formed of  
 45 sheet metal having flanged edges, said flanges being slitted and turned inwardly to form a socket for said shaft; and a retaining plate formed of sheet metal having spring shaft  
 50 engaging fingers thereon and having retaining tongues arranged through said holder, as specified.

18. In a stereoscope, the combination of a shaft; a slide or picture holder formed of  
 55 sheet metal having flanged edges, said flanges being slitted and turned inwardly to form a socket for said shaft; and a retaining plate for said shaft, secured to said holder.

In witness whereof we have hereunto set  
 our hands and seals in the presence of two 60 witnesses.

ELLSWORTH E. CLARK. [L. S.]  
 HARRY A. DOUGLAS. [L. S.]

Witnesses:

AMELIA J. ALBER,  
 OTIS A. EARL.