

G. ERDBRÜGGER.
 APPARATUS FOR PRODUCING AND MULTIPLYING RELIEVS AFTER PICTURES.
 APPLICATION FILED SEPT. 19, 1907.

925,468.

Patented June 22, 1909.

3 SHEETS—SHEET 1.

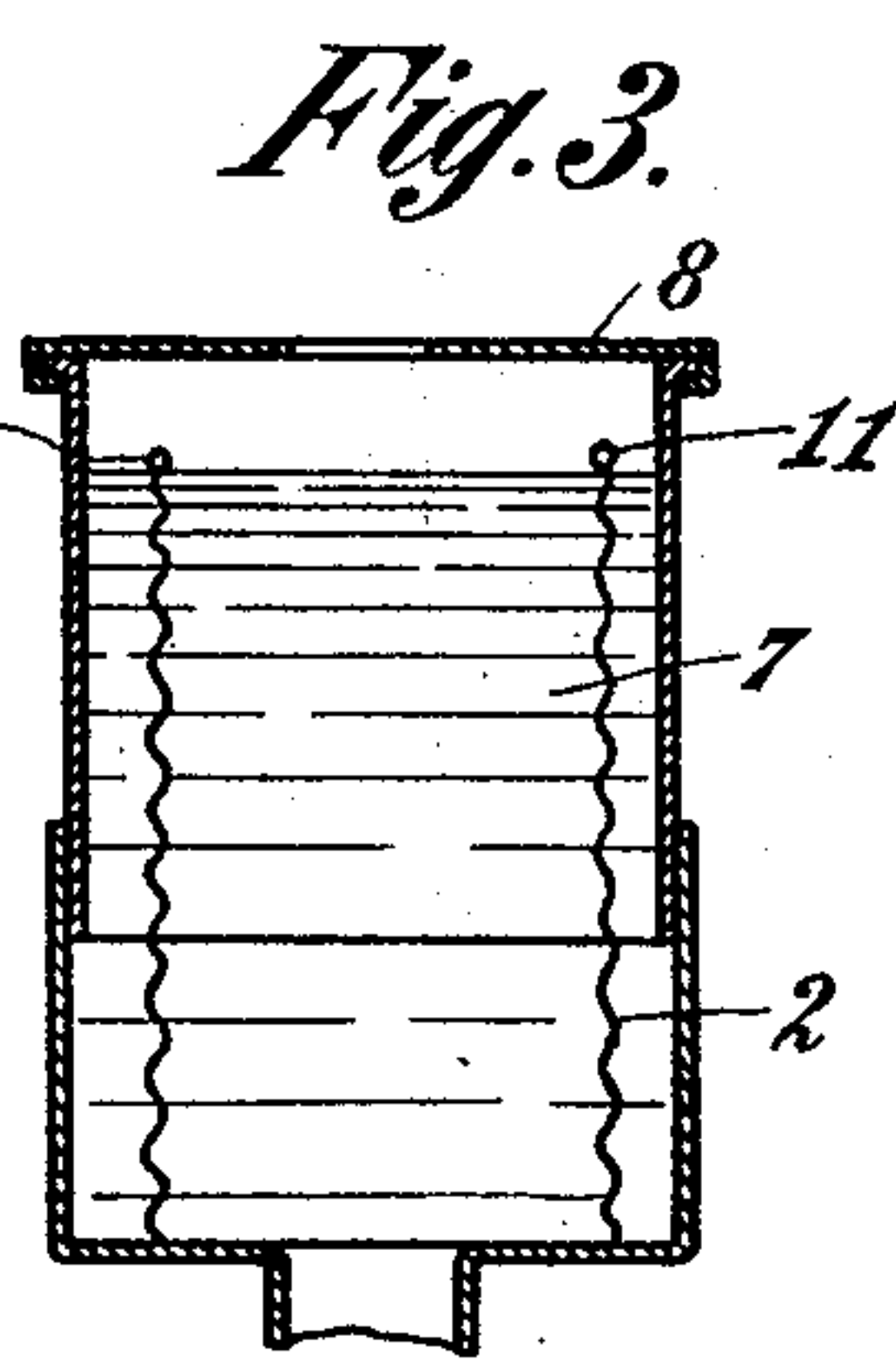
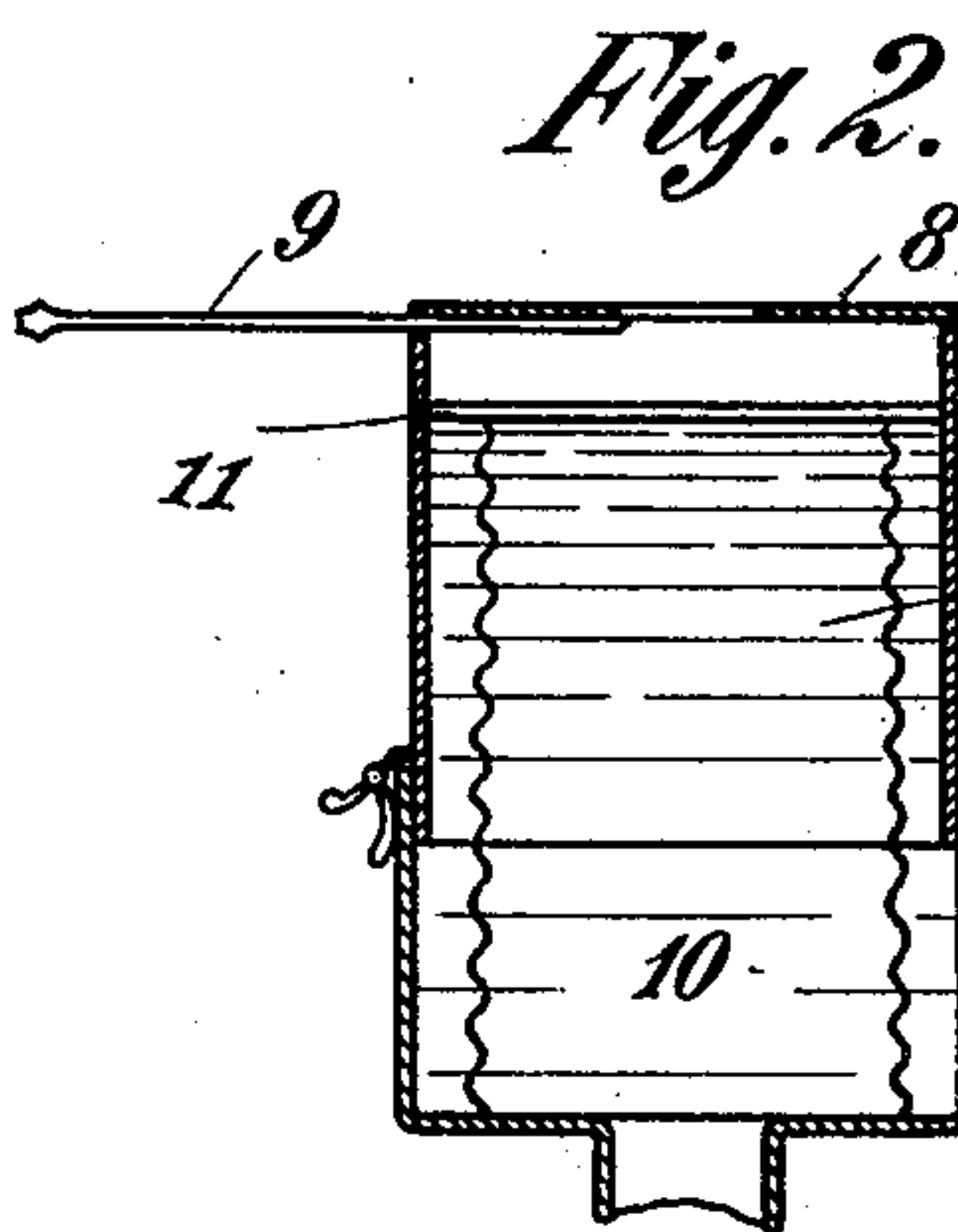
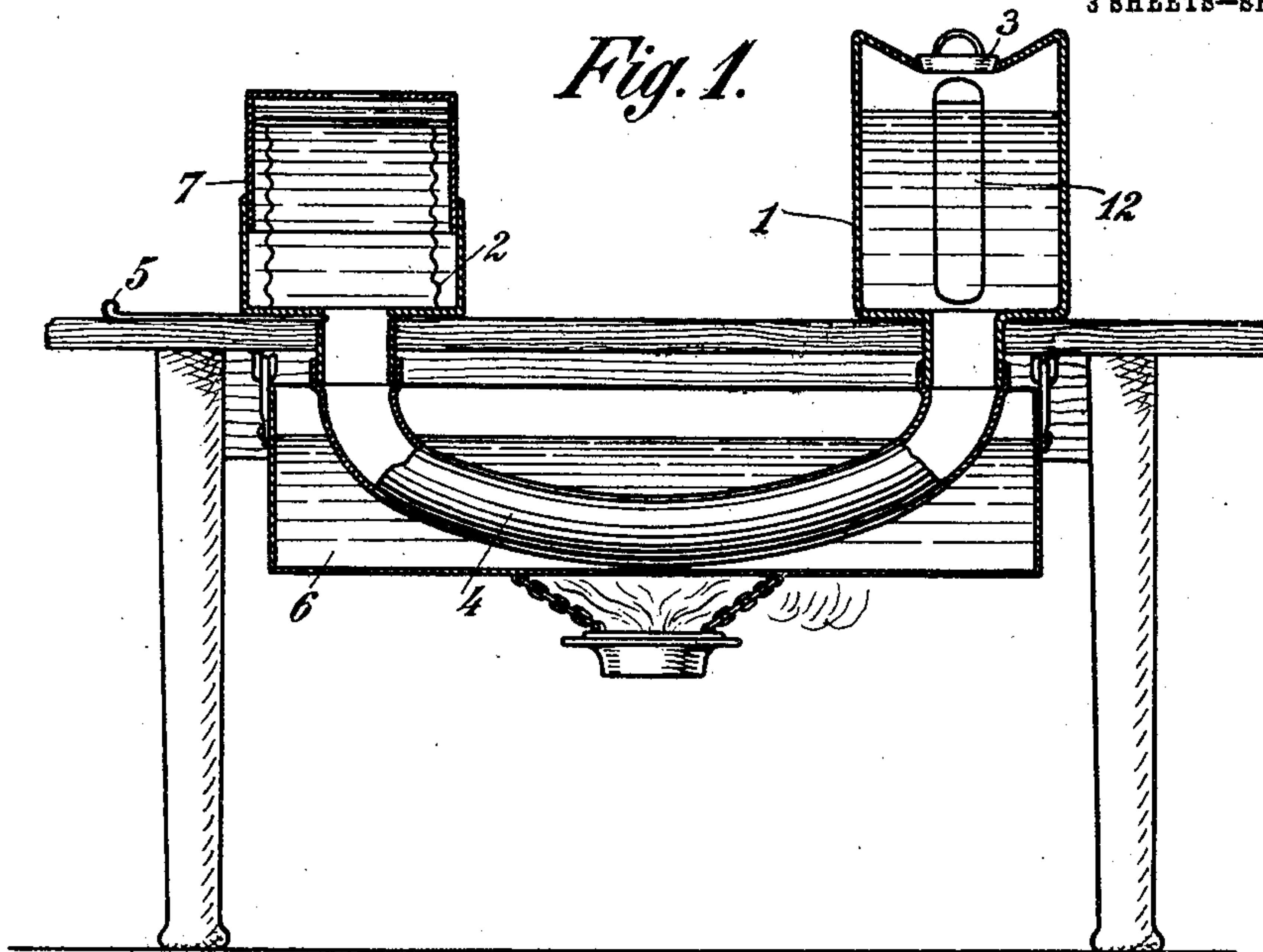


Fig. 5. *Fig. 4.*

Witnesses.
S. Ford
A. H. Hadden



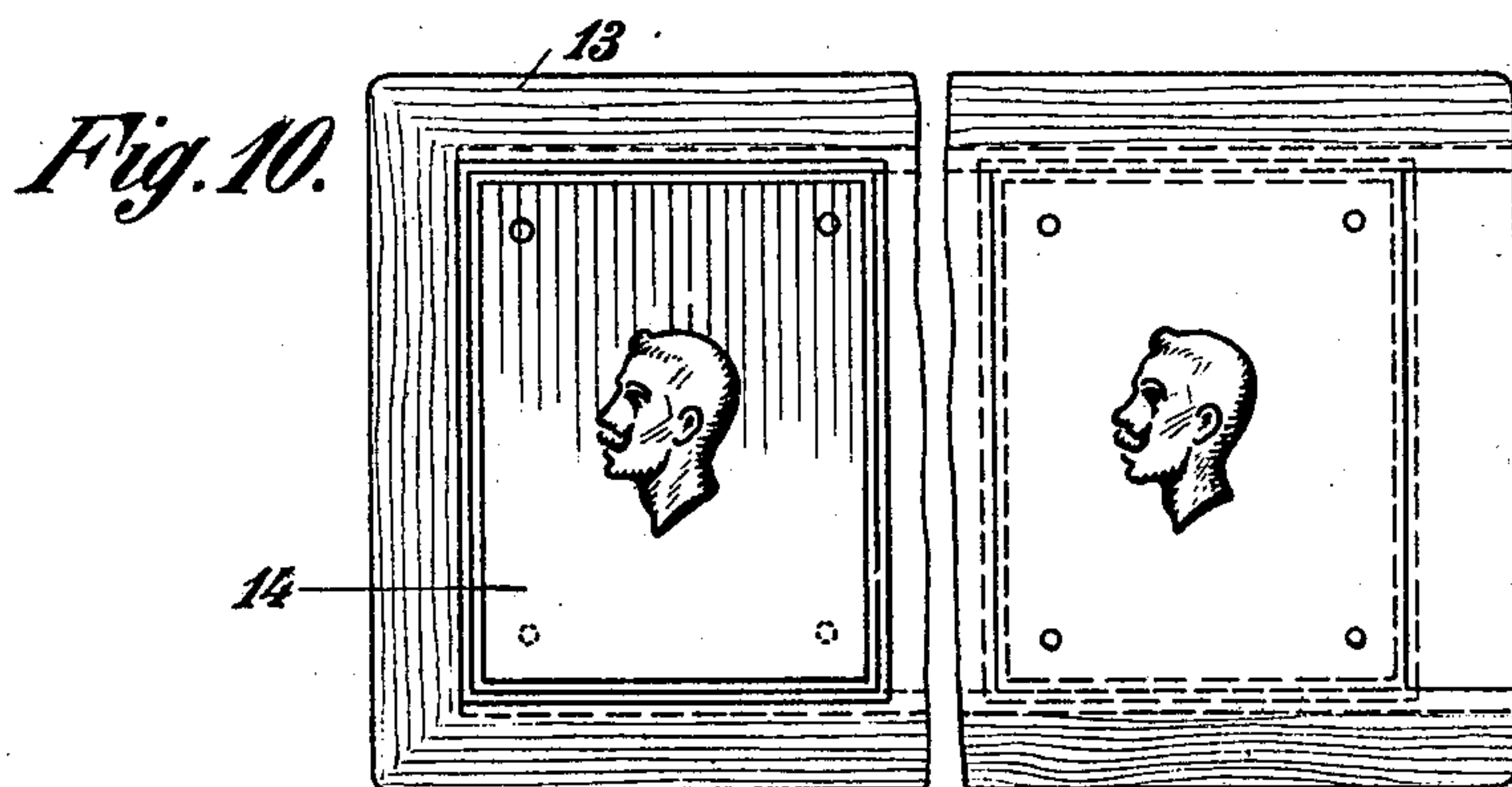
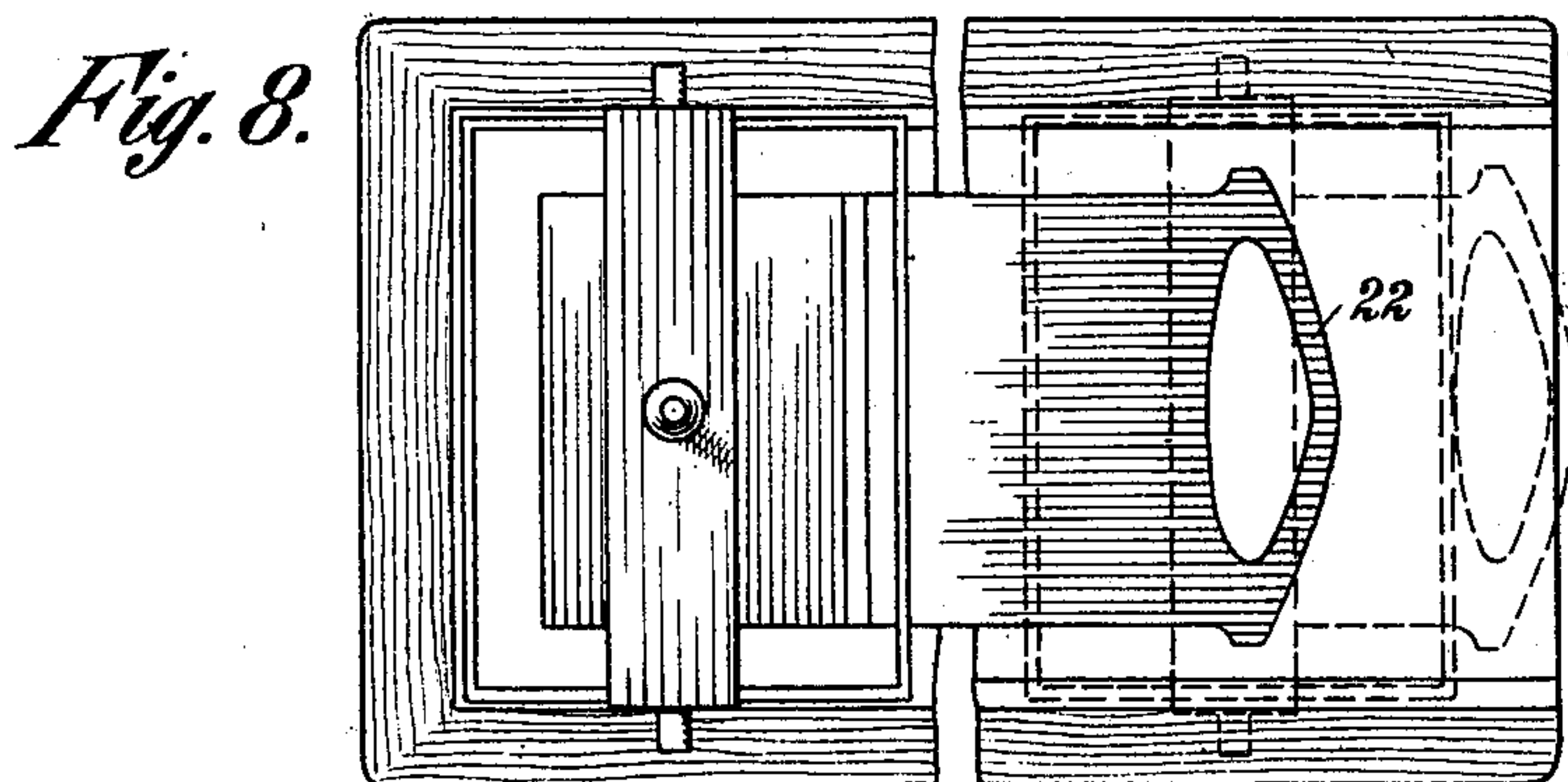
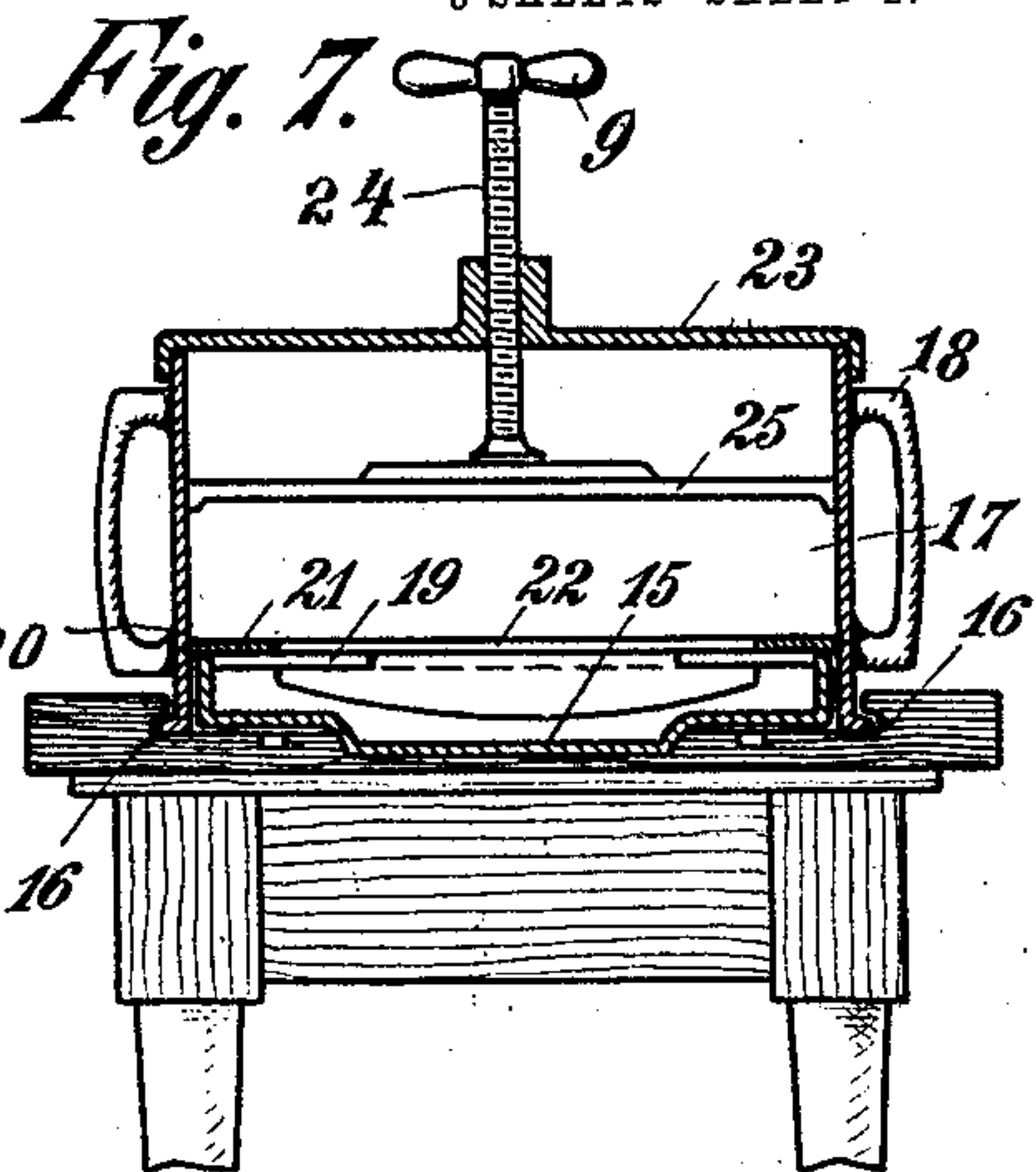
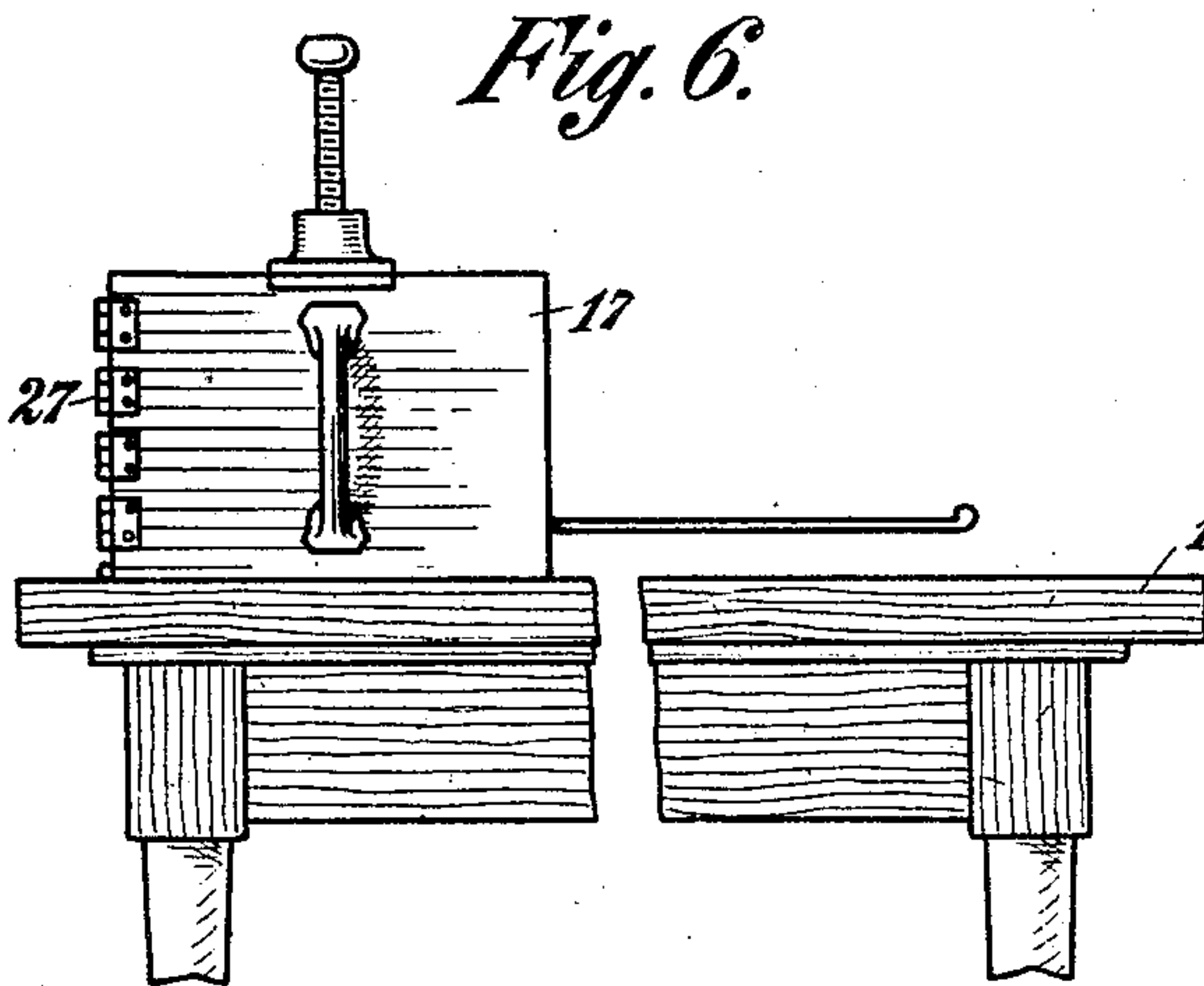
Inventor:
Gustav Erdbrügger
 by *R. Hadden*
 Attorney

G. ERDBRÜGGER.
 APPARATUS FOR PRODUCING AND MULTIPLYING RELIEVS AFTER PICTURES.
 APPLICATION FILED SEPT. 19, 1907.

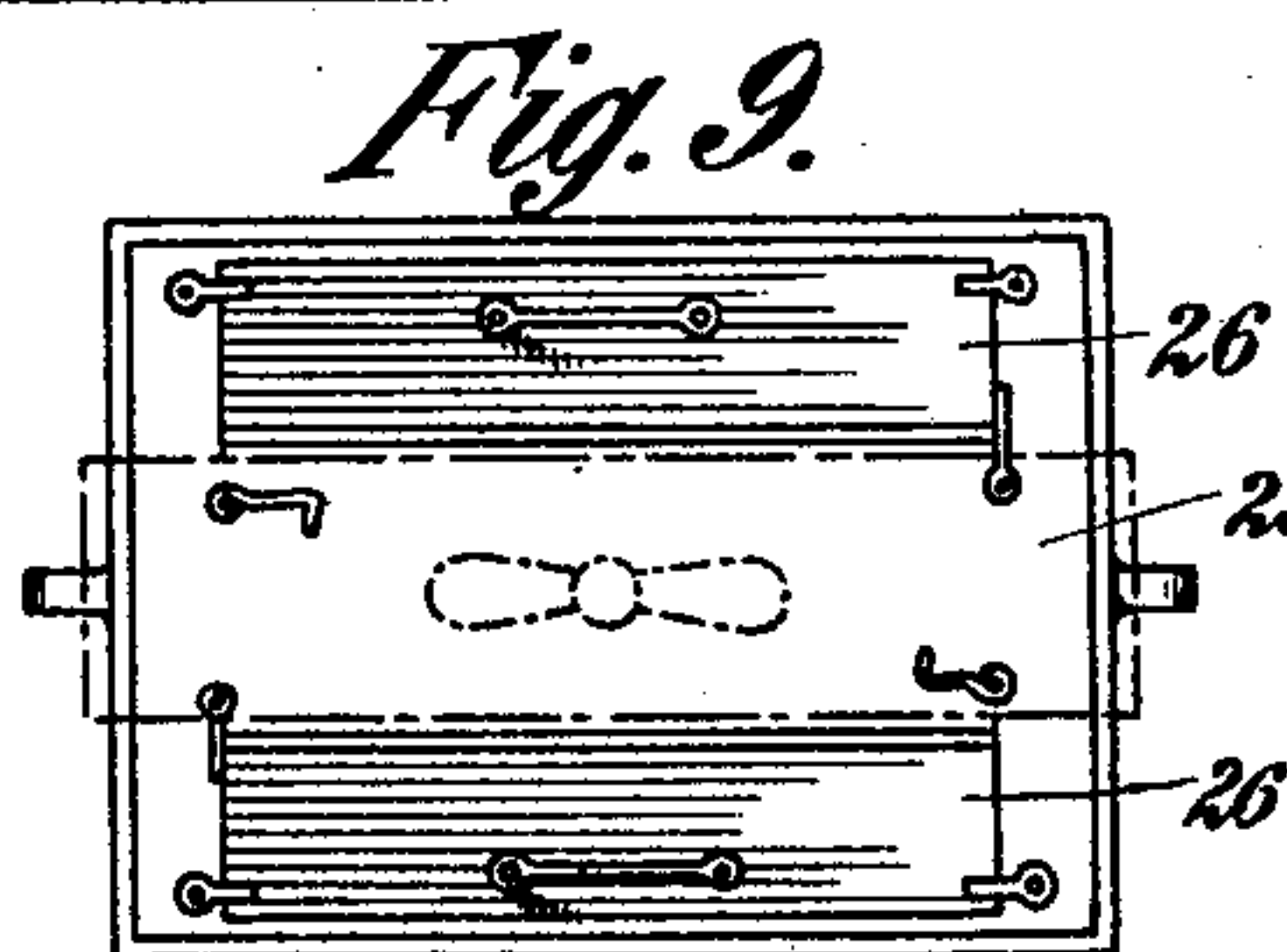
925,468.

Patented June 22, 1909.

3 SHEETS—SHEET 2.



Witnesses.
S. Ford
A. Hadden

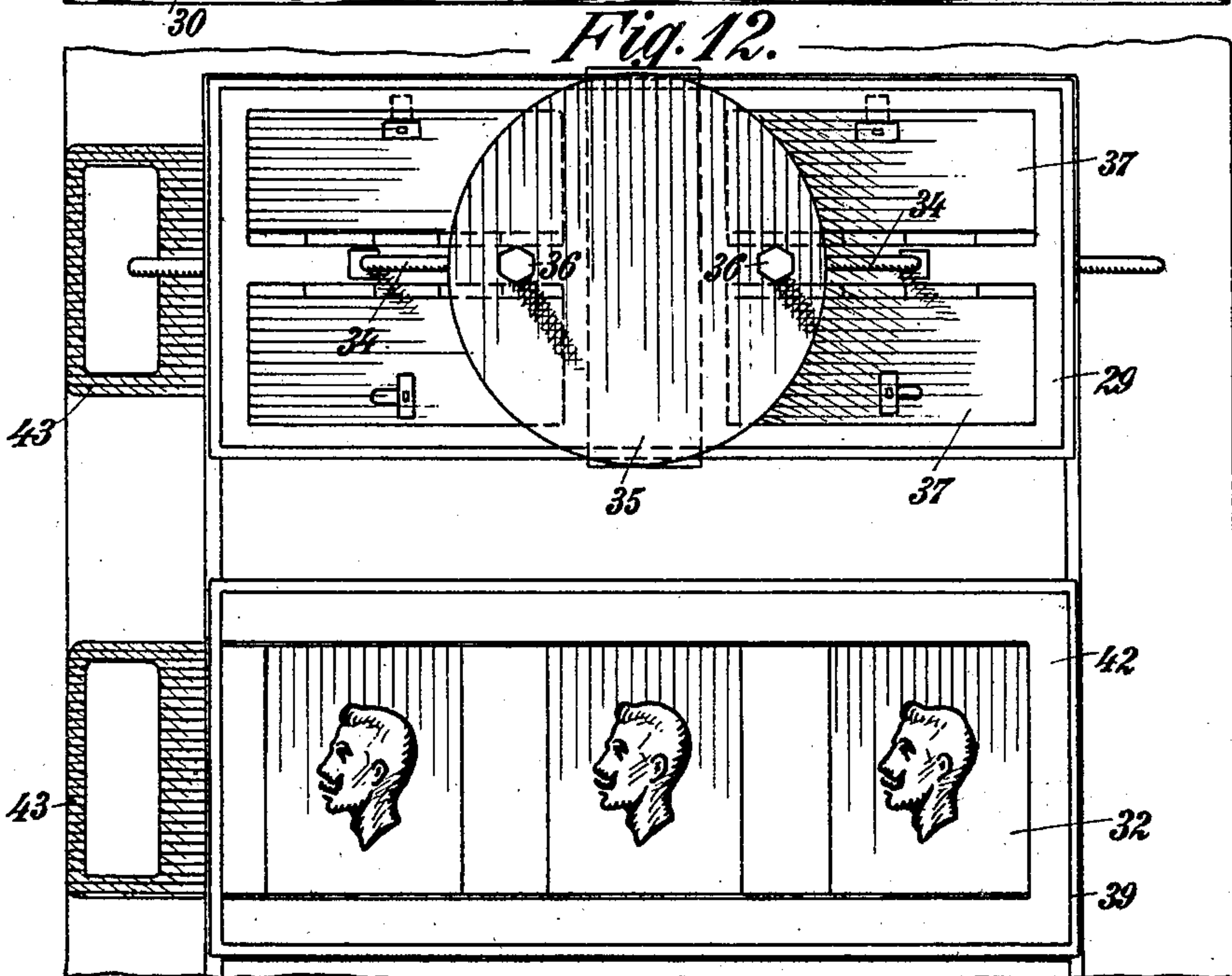
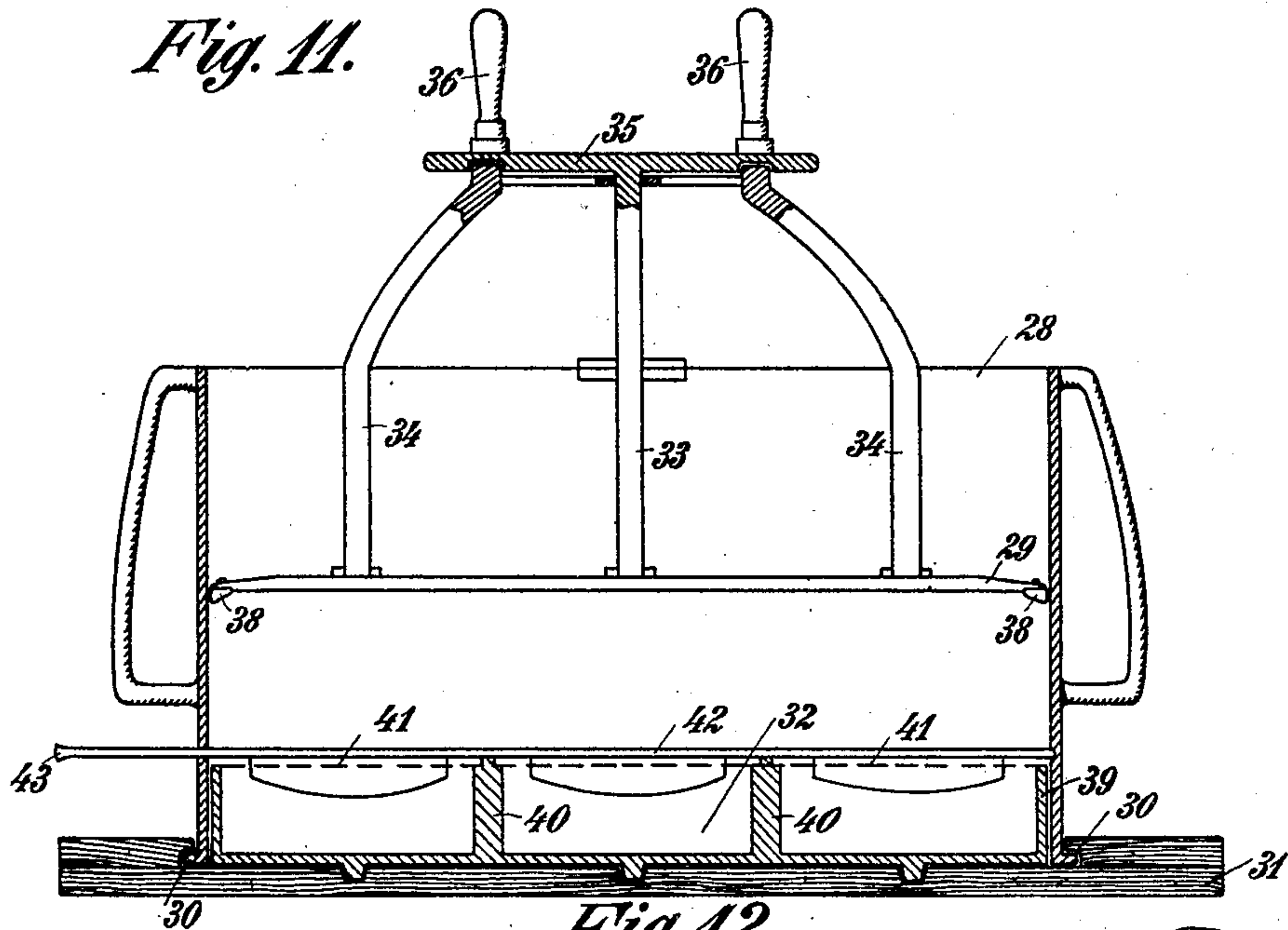


Inventor:
Gustav Erdrügger
 by *R. Hadden*
 Attorney

G. ERDBRÜGGER.
 APPARATUS FOR PRODUCING AND MULTIPLYING RELIEVS AFTER PICTURES.
 APPLICATION FILED SEPT. 19, 1907.

925,468.

Patented June 22, 1909.
 3 SHEETS—SHEET 3.



Witnesses.

S. Ford
A. H. H. H.

Inventor.

Gustav Erbrügger
 by *R. H. H. H.*
Attorney.

UNITED STATES PATENT OFFICE.

GUSTAV ERDBRÜGGER, OF EPPSTEIN, GERMANY, ASSIGNOR TO HERMANN SECKENDORFF,
OF HANOVER, GERMANY.

APPARATUS FOR PRODUCING AND MULTIPLYING RELIEVOS AFTER PICTURES.

No. 925,468.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed September 19, 1907. Serial No. 393,682.

To all whom it may concern:

Be it known that I, GUSTAV ERDBRÜGGER, civil engineer, a subject of the King of Prussia, residing at Villa Stolzenfels, Eppstein, German Empire, have invented a new and useful Apparatus for Producing and Multiplying Relievos After Pictures, of which the following is a specification.

This invention relates to an apparatus for producing relievos, by which any picture can be changed into a relievo without distorting the picture and by which the relievo can be multiplied by using the negative of the relievo as a matrice.

The process consists in transferring the picture to a paper which when it is damp can be greatly stretched. Upon the back of the paper is poured a plastic and rapidly hardening mass and the paper is then molded into a relievo from the front side. In consequence of the great extensibility of the paper the distortions of round surfaces, which are unavoidable with the other processes, are here avoided and the relievo retains the correct proportions. I achieve this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the molding box and the receptacle for the hardening mass, Figs. 2 and 3 are longitudinal and a cross-section of the molding box, respectively, Fig. 4, is a front view of the picture, Fig. 5, is an end view of the picture, Fig. 6 is a front elevation, of another form of molding appliance, Fig. 7 a cross section, of the device shown in Fig. 6, Fig. 8 a plan view of the multiplying device, Fig. 9 a plan-view of the press-plate, Fig. 10 is a side view of the matrice with its frame. Figs. 11 and 12 show, in front-elevation and a plan-view, the connections of several molding devices.

The plastic mass used for pouring behind the relievo is a composition boiled together of ground slate, porcelain earth, white lead a fibrous material like hemp-tow, animal glue and water. When heated it is thickly liquid or viscid and becomes as hard as stone when exposed to the air.

Upon a table are placed the receptacles 1 and 2. The former serves to hold the mass, and is closed by the lid 3, which has several perforations for letting the air through.

The receptacle 2, which stands on the same level with the receptacle 1, is the molding-box. It stands in communication through a

tube 4, which is preferably of earthen-ware, with the receptacle 1, and can be closed at the bottom by a slide 5. The tube 4 runs through a tub with hot water fastened on the table which keeps the mass in a viscid state and is heated by a spirit flame. The molding-box 2, as shown in Figs. 2 and 3, consists of a solid bottom part and a top part 7 which moves in the bottom part, the upper part is closed by a frame 8, on which is fastened the picture to be treated.

Below the frame 8 is a slide 9 sharpened like a knife, which is of the width of the box. By a number of springs 10, which engage cross-bars 11, the upper box 7 is held in its highest position.

In order to produce the relievo the picture is first transferred upon paper which when moistened can be greatly stretched, then a pattern is cut out of wood, sheet metal, or the like, which corresponds exactly to the silhouette of the picture, and on this the elastic paper is stretched out in such a manner that the pattern accurately corresponds with the outlines of the silhouette on the picture. The picture is coated on the back with a hot fluid, preferably glycerin, and softened thereby. It is then placed into the frame 8 and the receptacles 1 and 2 are filled so far that the mass ascends up to the lower edge of the frame 8. On the receptacle 1 is provided a scale 12 which shows the height or level of the mass. When the receptacle 2 is quite filled the slide 5 is closed and the upper box 7 is pressed into the bottom box until the extensible paper, as shown in Fig. 5, bulges out in the free space of the pattern. The upper box is then retained in its position, for which an adjusting device may be used and the slide 9 is advanced, so that its sharp edge cuts off the mass filling the silhouette. Now the frame 8 is taken off the box 7, and the desired relievo is given to the picture by a careful treatment on the front side with a suitable instrument. The mass hardens during the work, so that the picture retains the form given to it. If the picture is finished, the box 7 is brought again into its highest position and the slide 5 is opened, so that the mass assumes the same level in both receptacles.

After the relievo is finished a matrice is formed which serves to produce large quantities. When the relievo has become sufficiently hard a matrice of plaster or the like

can be formed from it for producing any large number of casts. This is done by placing a piece of paper, being the same as used for producing the original relieves and very extensible in a damp state into the matrice and pouring the described mass upon it. Thereupon a great pressure is exerted upon the mass, and it is then allowed to harden. For this purpose the device illustrated in Figs. 6-12 is used. In a table 13 are placed the matrices 14 in strong metal plates 15. Over them, in grooves 16 slides the molding-box 17 with the handles 18. One side 27 of the box can preferably be turned up for cleaning it. The paper is fastened in a frame 19 similar to the above described frames 8, which exactly fits into the metal plates 15, and is at one level with their upper edge. Close above the frame 19 a brass plate 21 slides in grooves 20 of the box 17. The plate has a slide 22 of the same size as the pictures of which relieves are to be made. The box 17 is closed at the top by a lid 23 through which a screw 24 goes to the press-plate 25. The latter is, as shown in Fig. 9, provided with lids 26, 26. After the paper in the frame 19 has been placed in one of the matrices the box 17 is through the lids 26 of the press-plate 25, filled with heated mass and passed over the matrice, so that the frame 21 lies exactly on the frame 19. When the slide 22 is opened the mass flows over the back of the picture and is strongly pressed by the screw 24 and plate 25. Now the slide 22 is advanced and the mass lying below it is cut off. The box 17 is closed by the slide 22 and the other matrice may be advanced while the picture hardens in the first. The box is preferably made of such size that with one charge it can remain in action for about one hour.

Figs. 11 and 12 show a combination of several multiplying apparatus. The molding-box 28 with the press plate moves in grooves 30 of the plate 31 over the matrices 32. In Fig. 12 there are supposed to be two rows of matrices of which one is visible, while the molding box 28 covers the other. As several matrices are arranged here and the pressing-surface is therefore larger than in the case of only one matrice the press-plate 29 is, in order to attain a uniform pressure, provided, besides the screw 33, with two pressing bows 34 which are at the top connected by a plate 35. To the screw 33 is fastened a disk 35 with handles 36 which transmit the pressure of the screw to the bows 34. The press-plate is, as above described, provided with lids 37 for filling in the mass and with lateral tightening strips 38. The box 39 of the matrice is rigidly connected with the bottom part 31. The several matrices are separated by cross-pieces

14 between which the picture frames 41 are placed. The molding box 28 is closed at the bottom by the brass-plate 42 with the slide 43 which both are exactly similar to the above described parts 21 and 22. The working of the device is exactly the same as that of the one illustrated in Figs. 6-10. Any number of matrices may be arranged in a row and any number of rows of pictures may be placed into the track of the molding box.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare, that what I claim is:

1. In an apparatus for producing relieves from pictures, a molding box, a storage receptacle, and a tube connecting said box and receptacle.

2. In an apparatus for producing relieves from pictures, a molding box, a movable cover on said box for receiving a picture to be treated, a storage receptacle for the producing mass and a heated tube connecting said box and receptacle.

3. In an apparatus for producing relieves from pictures, a molding box having a movable cover for receiving the picture to be treated, a storage receptacle for the producing mass, said receptacle and box being in heated communication and a slide with a knife edge carried by the movable part of the box.

4. Apparatus for distending extensible sheets comprising in combination means for applying plastic substance under pressure against one surface of said sheet and a stencil applied to the other surface of said sheet.

5. Apparatus for distending extensible sheets comprising in combination means for applying plastic substance under pressure against one surface of said sheet and a stencil for limiting the area of the sheet subject to extension under pressure.

6. Apparatus for distending extensible sheets comprising in combination means for applying plastic substance in bulk under pressure to one surface of said sheet, and means for supporting the other surface of said sheet against said pressure in a configuration according to the relief desired.

7. Apparatus for distending extensible sheets comprising in combination means for applying plastic substance under pressure against one surface of said sheet and a stencil applied to the other surface of said sheet together with a slide for severing the plastic substance in a plane parallel to said stencil.

In witness whereof I have signed this specification in the presence of two witnesses.

GUSTAV ERDBRÜGGER.

Witnesses:

JEAN GRUND,
CARL GRUND.