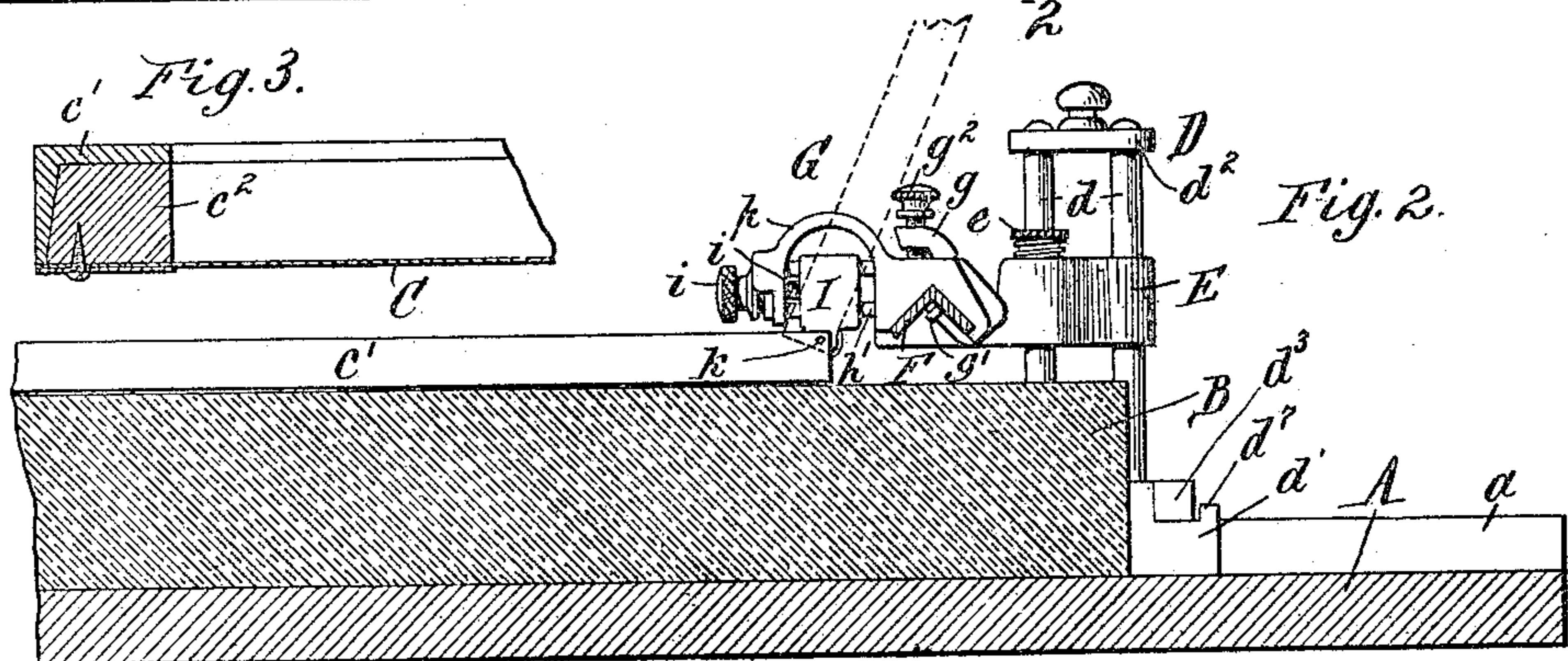
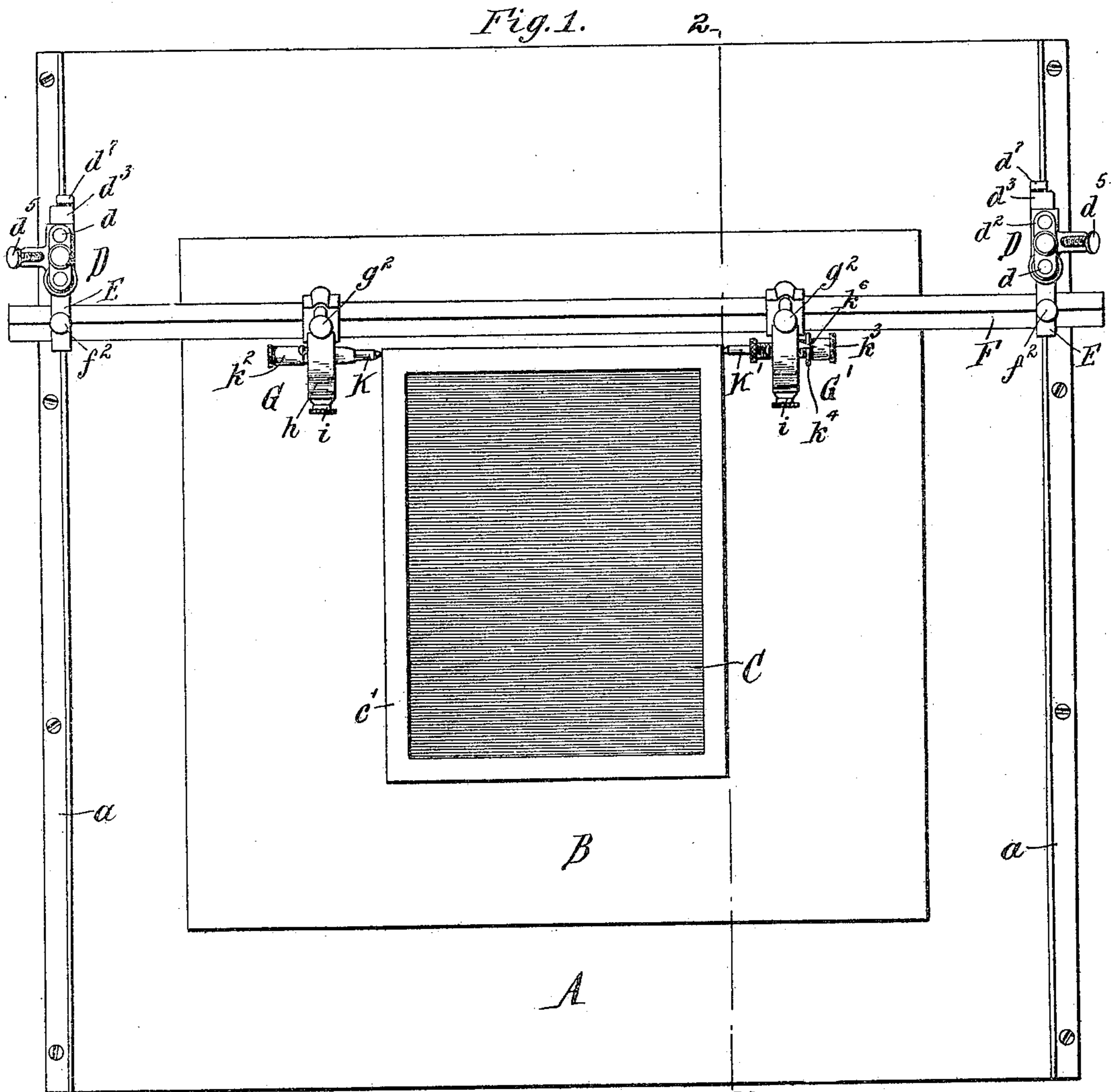


J. J. DRUMB.  
ADJUSTABLE HOLDER FOR SHADING FILMS.

APPLICATION FILED MAR. 22, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

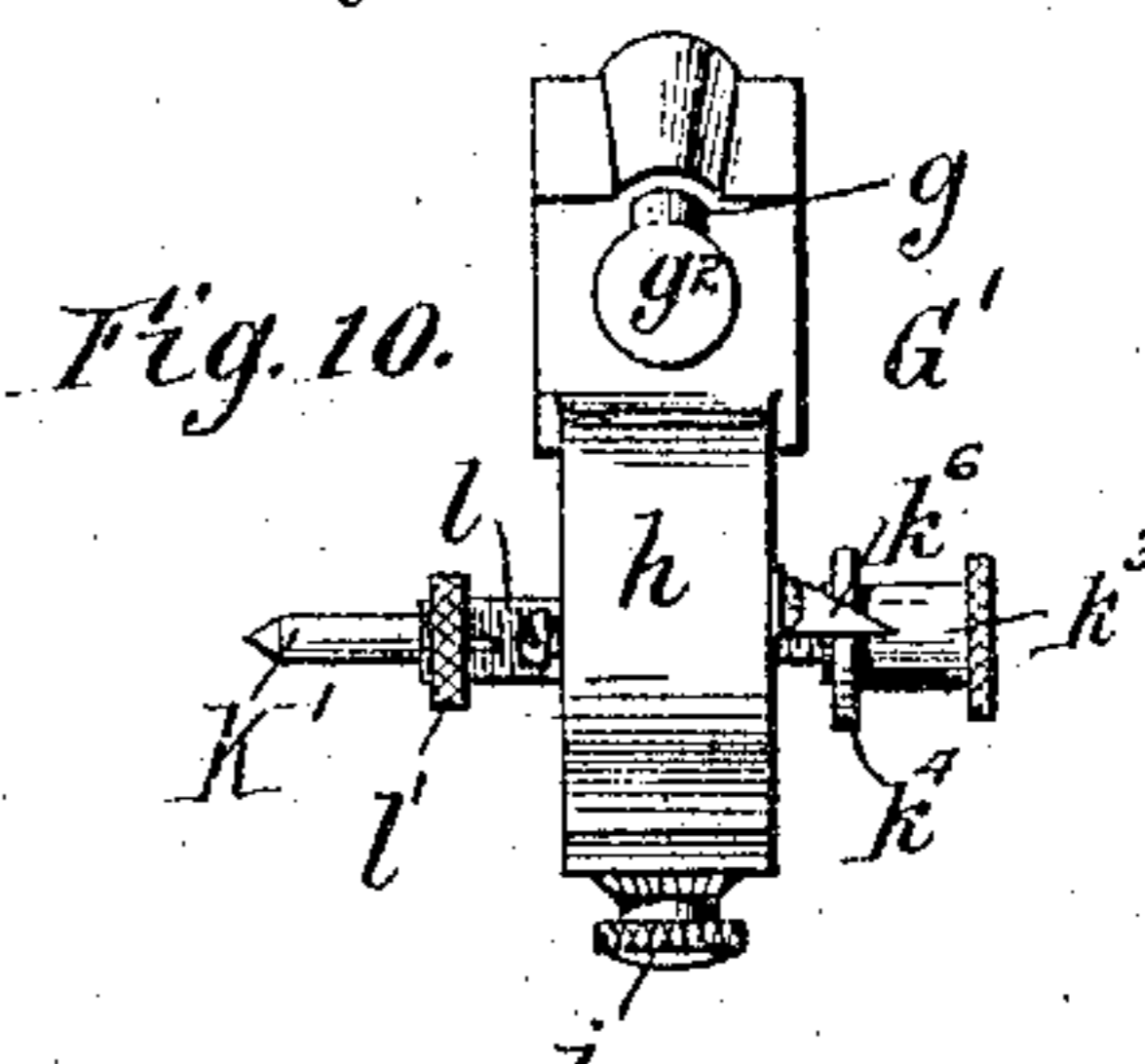
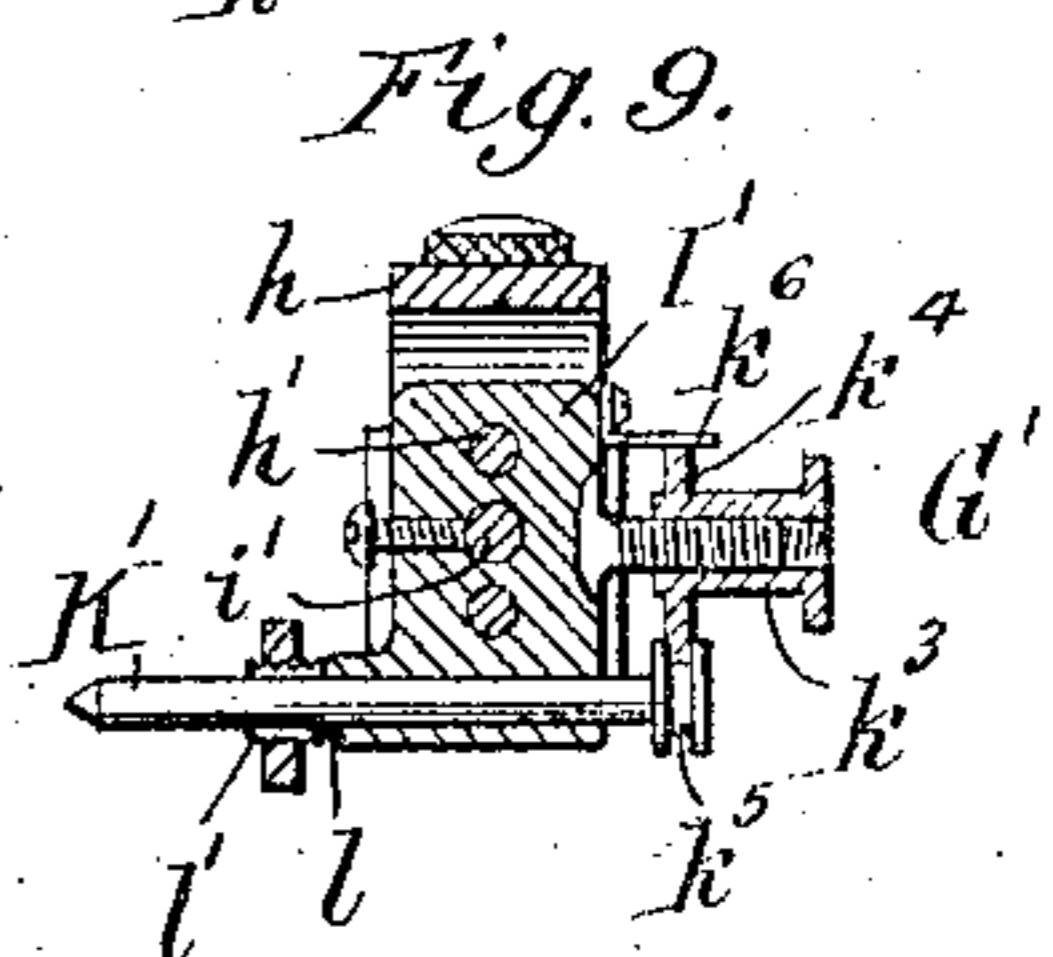
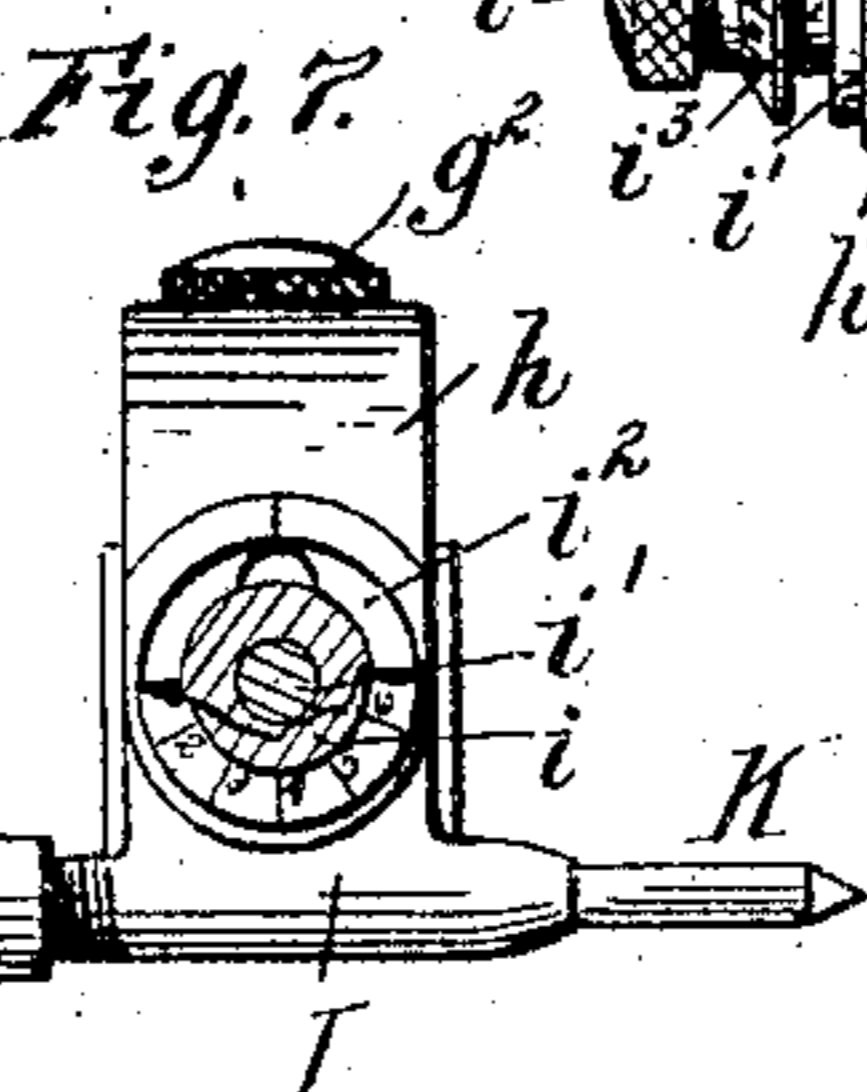
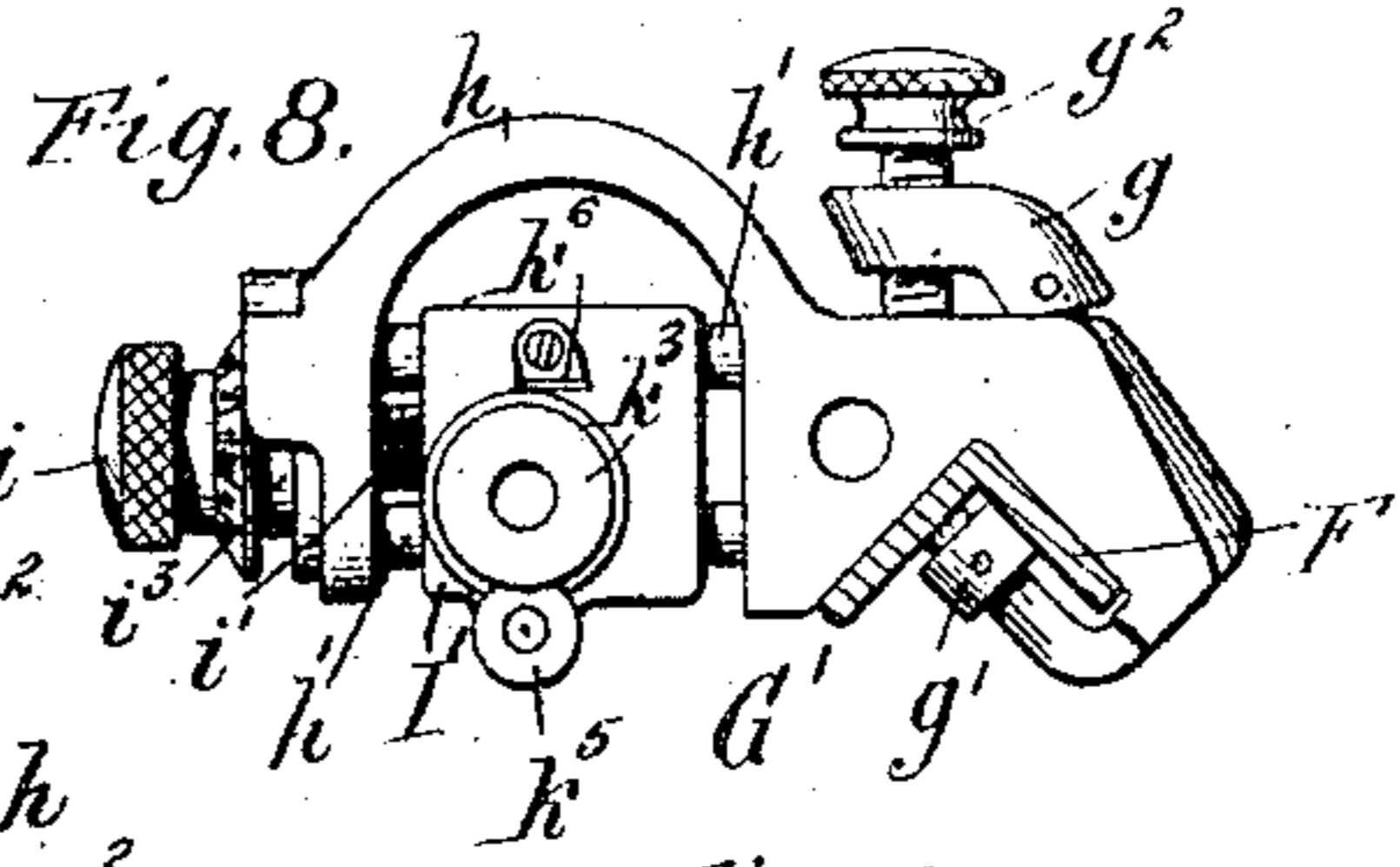
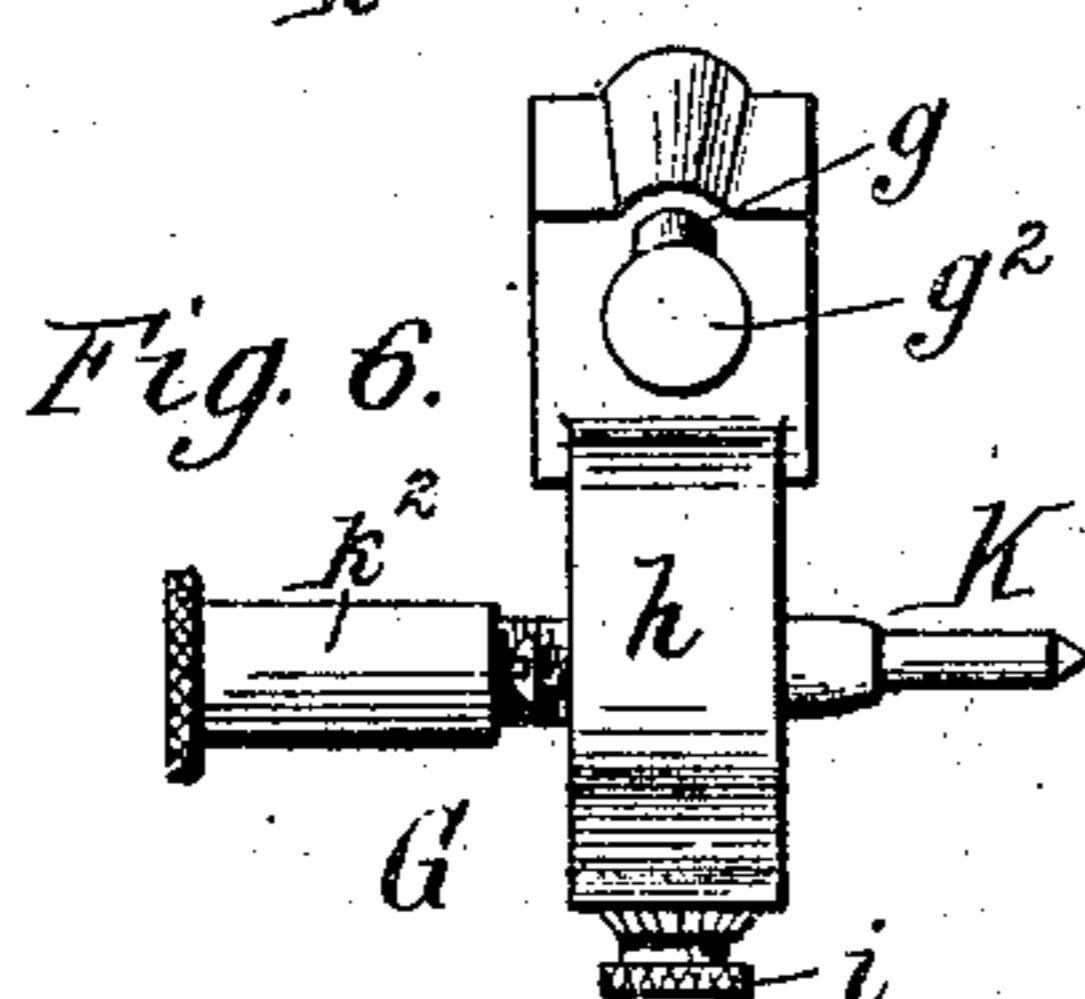
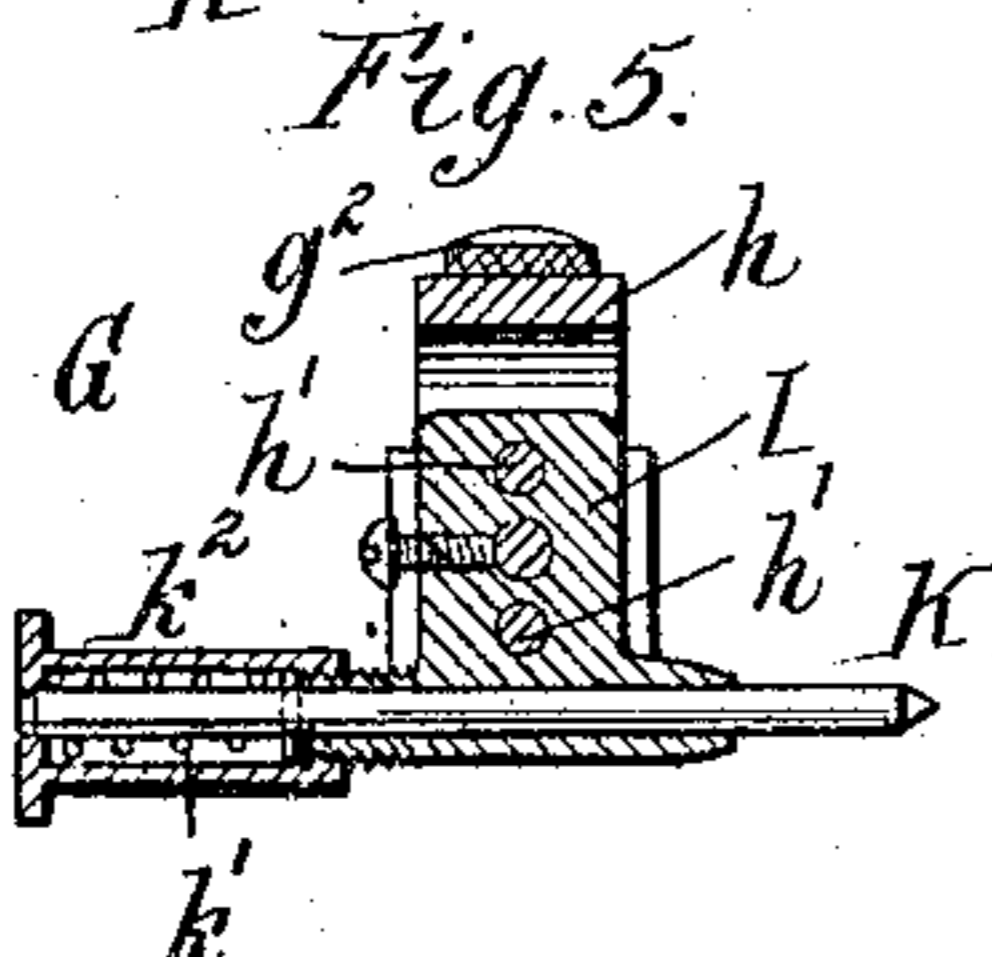
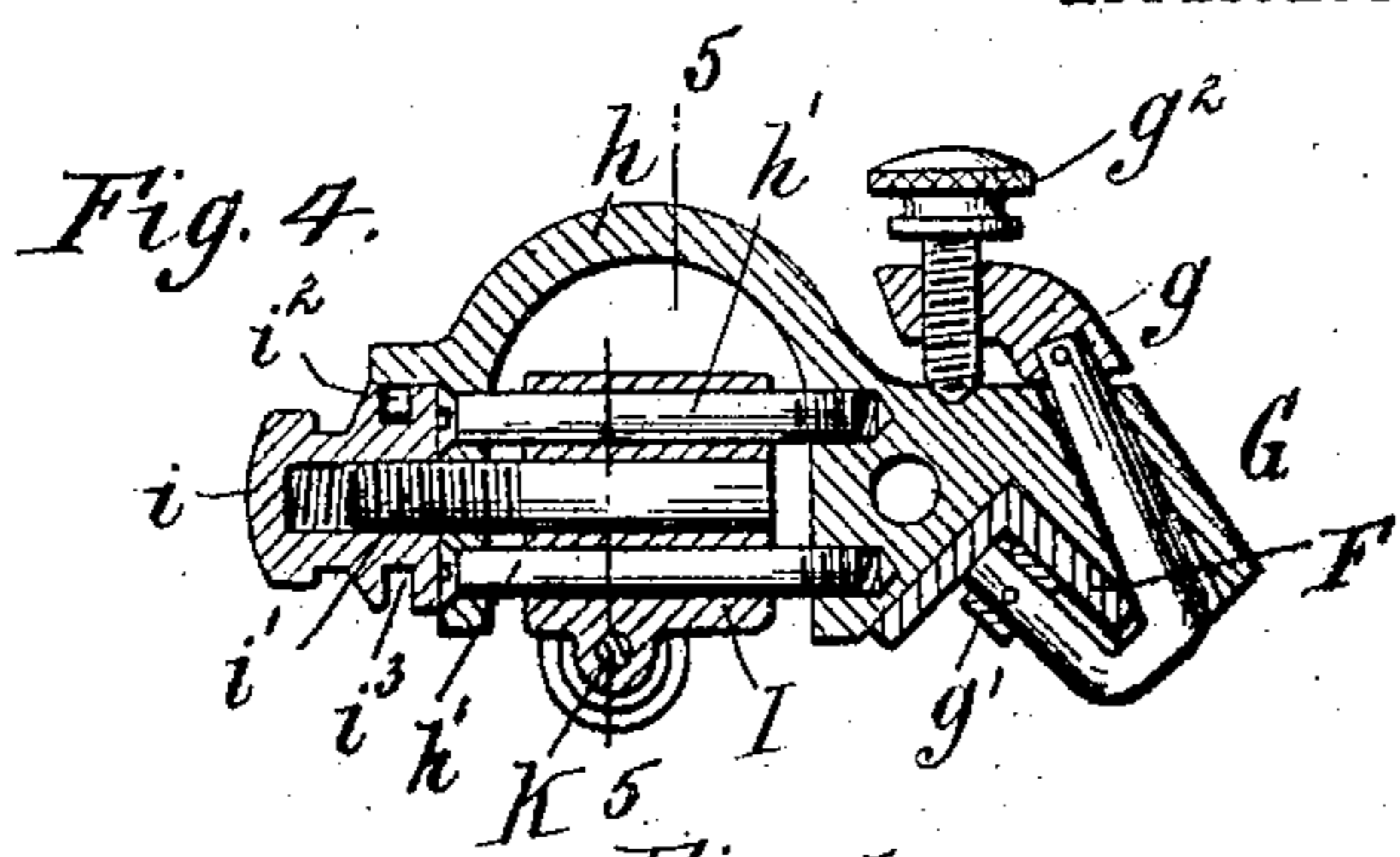
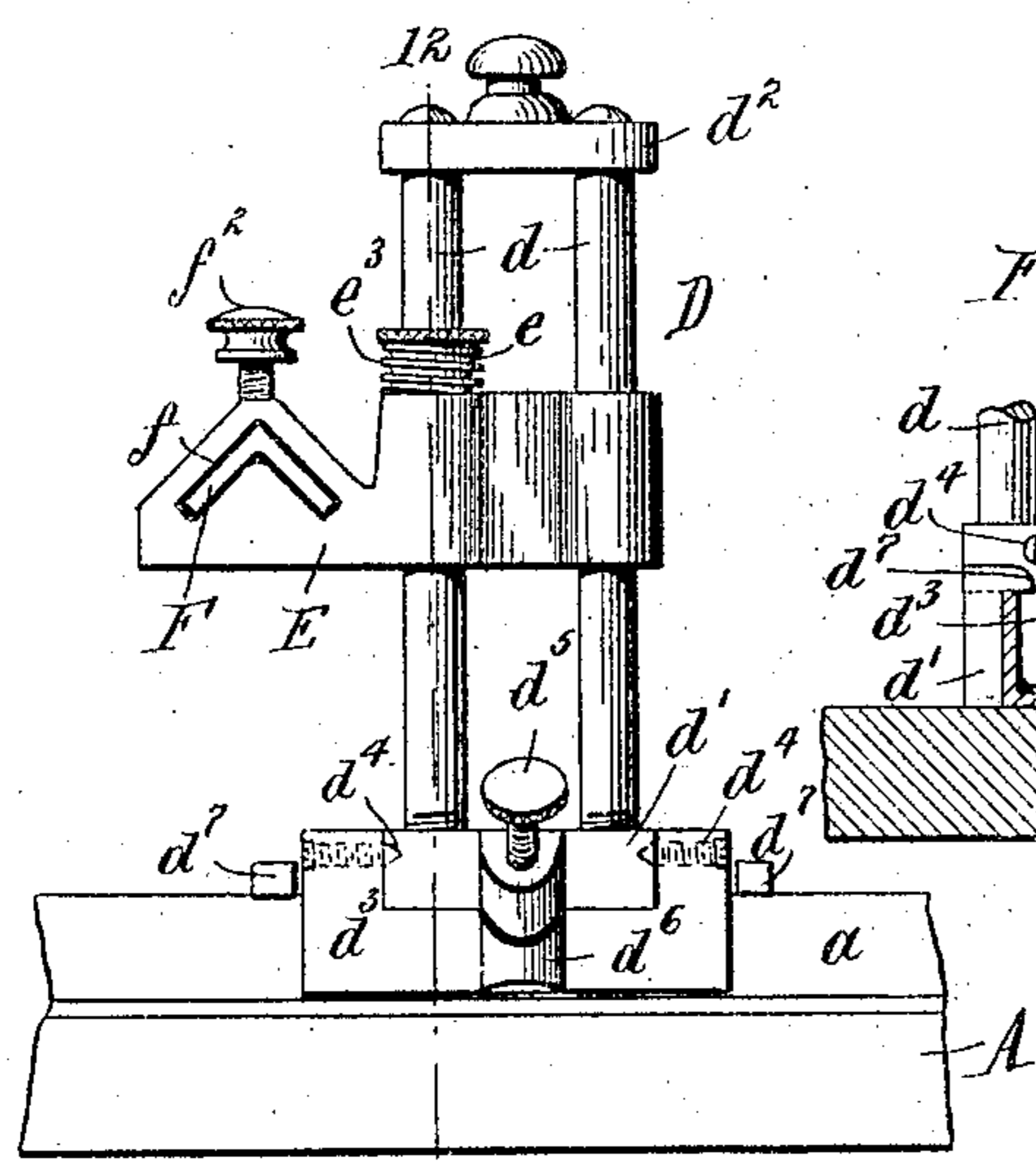


Fig. 11.



# UNITED STATES PATENT OFFICE.

JOHN J. DRUMB, OF BUFFALO, NEW YORK, ASSIGNOR TO DIAMOND SHADING FILM COMPANY, OF BUFFALO, NEW YORK.

## ADJUSTABLE HOLDER FOR SHADING-FILMS.

No. 798,272.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed March 22, 1905. Serial No. 251,389.

*To all whom it may concern:*

Be it known that I, JOHN J. DRUMB, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Adjustable Holders for Shading-Films, of which the following is a specification.

This invention relates to devices used in lithography and printing for holding and adjusting the well-known framed shading-films. These holding devices are constructed to afford a coarse or quick adjustment and also a fine or accurate adjustment of the shading-film in two directions to enable a quick and accurate positioning thereof relative to the work or stone to produce different desired shading effects. The film-frame is movably held so that it can be swung up out of the way to expose the work and can also be removed, inked or reinked, and replaced without loss of time to the precise original position or to such near relation thereto as may be required.

The primary object of this invention is to provide an apparatus of this character with devices for effecting the various adjustments, which devices are of simple and desirable construction and enable a very quick, easy, and exact adjustment of the film and hold the latter steady when adjusted.

In the accompanying drawings, consisting of two sheets, Figure 1 is a plan view of an adjustable holder for shading-films embodying the invention. Fig. 2 is a fragmentary transverse sectional elevation thereof, on an enlarged scale, in line 2-2, Fig. 1. Fig. 3 is a fragmentary section, on an enlarged scale, of the film-frame. Fig. 4 is a longitudinal sectional elevation, on an enlarged scale, of one of the center supports. Fig. 5 is a transverse sectional elevation thereof in line 5-5, Fig. 4. Fig. 6 is a plan view thereof. Fig. 7 is a front elevation, partly in section, thereof. Figs. 8, 9, and 10 are views of the other center support, similar, respectively, to Figs. 4, 5, and 6. Fig. 11 is a side elevation, on an enlarged scale, of one of the supporting-standards for the guide-bar. Fig. 12 is a sectional elevation thereof in line 12-12, Fig. 11. Fig. 13 is an end elevation of the lower portion of the supporting-standard, showing the track in section.

Like letters of reference refer to like parts in the several figures. 55

A represents a suitable base or board, on which the stone or work is placed and which supports the several parts of the apparatus, and *a* indicates guides or tracks arranged parallel with each other at the opposite sides of the base, said tracks consisting, preferably, of angle-bars secured to the base with one flange extending upwardly. 60

B represents the stone plate or other surface on which the shading is to be produced, and C the shading-film, which is stretched on a rectangular frame, preferably constructed as hereinafter described. 65

The film-frame, as usual, is pivoted at one end on oppositely-disposed aligned centers or pivots mounted for adjustment both longitudinally and transversely of the pivotal axis on supports which are adjustable longitudinally on a horizontal guide-bar supported and adjustable vertically on upright standards, which in turn are preferably adjustable forwardly and rearwardly on the base guides or tracks *a*. The upright standards D for the guide-bar, (see Figs. 11-13) are alike, but oppositely arranged, and each consists, preferably, of parallel vertical posts *d*, connected at their lower and upper ends by a long stationary clamp-plate *d'* and a cap-plate *d''*. 70

*d''* is a long clamp-plate arranged opposite to the stationary clamp-plate *d'* and hinged to the latter by pivots *d'''*, screwed into holes in upwardly-projecting lugs at the ends of the clamp-plate and bearing in sockets in opposite ends of a lateral hinge-lug on the upper portion of the stationary clamp-plate. The two plates bear against the opposite faces of the upright flange of the track *a*, which they are caused to grip by a screw *d''''*, having a screw-threaded engagement with a lug on the stationary clamp-plate and bearing at its end against a lug *d'''''*, projecting from the swinging clamp-plate. The two long clamp-plates afford an extended bearing for the standard on the track and when clamped thereon hold the standard very firmly and prevent any twisting or play thereof. The stationary clamp-plate is provided at opposite ends with lateral lugs *d''''''*, which overhang and bear on the top edge of the track to insure the perpendicularity of the standard. 85 90 95 100 105

E represents a bracket which is movable

vertically on the standard, the vertical posts of which pass through parallel guide-holes in the bracket. The bracket is held in adjusted positions on the standard by a clutch device consisting of a sleeve  $e$ , loosely surrounding one of the standard-posts and extending into a conical or upwardly-tapering cavity  $e'$  in the bracket and provided with lateral holes in which are confined clutch-balls  $e^2$ . The sleeve is normally held up and the balls caused to bind between the post and the opposing conical wall of the cavity  $e'$  by a spring  $e^3$ , surrounding the clutch-sleeve between the bracket and an enlarged upper end or head of the sleeve. Upward pressure on the clutch-sleeve or bracket will free the clutch-balls and allow the bracket to be raised on the standard, while a simple downward pressure on the head of the clutch-sleeve will free the balls and effect the downward movement of the bracket. In either case as soon as the pressure is removed the spring  $e^3$  will shift the sleeve upwardly, so that the balls will bind between the post and the wall of the cavity and hold the bracket in the position to which it is moved. This clutch enables the bracket to be quickly and easily raised and lowered by the simple act of pressure in the direction of desired movement of the bracket, and there is no set-screw or other device requiring special operation to release and secure the bracket.

F represents the horizontal guide-bar connecting and supported by the standards. The bar is preferably of angle shape in cross-section and arranged with the apex of the angle uppermost. It extends through correspondingly-shaped slots  $f$  in the forwardly-projecting ends of the two brackets E, in which it is removably secured by set-screws  $f^2$ , carried by the brackets. A light angle-shaped bar arranged as described is very stiff and cannot be easily sprung or flexed, so that the film is held rigidly from horizontal movement. In some classes of work it is not necessary to adjust the guide-bar vertically or horizontally, and for such purposes the bar can be stationarily secured in any usual way to a suitable base.

G G' represent the two adjustable supports or brackets which carry the centers or pivots for the film-frame. The supports are mounted to slide horizontally along the guide-bar F into any desired position and for this purpose are provided with  $\Lambda$ -shaped seats or bearing-notches which conform to and rest on the angle guide-bar. Each support is releasably secured on the guide-bar by a clamp consisting of a member  $g$ , (see Fig. 4,) having a shank passing loosely through a hole in the support, and a hooked lower end, which extends up under one of the flanges of the guide-rod F and is adapted to bear on the under side of the guide-bar near its angle. The hooked end preferably has a collar or en-

largement  $g'$ , which bears against one flange of the guide-bar, while the extremity of the hooked end bears against the other flange of the guide-bar. The upper end of the member  $g$  overhangs the guide-bar and has a threaded hole in which works a thumb-screw  $g^2$ , which bears at its end in a small socket in the top of the support at a point substantially above or opposite to the bearing-points of the hooked end of the clamp member. The hooked clamp member is free to move lengthwise and also to tilt or swing somewhat in its hole in the support toward and from the guide-bar, so that when the thumb-screw is tightened the support and bar are firmly clamped between the opposing hooked end of the clamp member and the thumb-screw. This clamp device forces the support down tight against the guide-bar and holds it rigid and steady, entirely preventing any wobbling or play thereof. The attachment is much more rigid than could be secured with an ordinary set-screw passing through the support and engaging the bar, for a set-screw would act to force the support away from the guide-bar instead of toward it and would allow more or less play of the support about the set-screw as a pivot.

The supports G G' have forwardly-extending arms or portions  $h$ , provided with depending outer ends which are connected to the body of the support by parallel screws or rods  $h'$ , passing through and forming guides for slides or blocks I I', which are adapted to move on said guides toward and from the horizontal guide-bar—that is, in a direction transversely of the direction of movement of the supports on the guide-bar. Each slide is adjusted back and forth by a rotatable adjusting-nut  $i$ , which has a screw-threaded engagement with a screw  $i'$ , fixed to and projecting forwardly from its slide. The adjusting-nut is held from longitudinal movement by the engagement of a semicircular flange or lip  $i^2$ , Fig. 7, on the front end of the arm of the support in an annular groove  $i^3$  in the adjusting-nut. The nut preferably has an annular dial-face provided with graduations coöperating with an index-mark on the front end of the support to facilitate accurate adjustments of the slide.

The centers or pivots K K' for the film-frame are mounted on the slides I I' and arranged in line opposite to each other and parallel with the guide-rod F. They are provided with conical inner ends which engage in corresponding seats or sockets  $k$  in the upper portions of the rear corners of the film-frame, so that the latter can be swung on the centers down into a horizontal operative position over the work, as shown by full lines in Fig. 2, or turned back out of the way to expose the work, as indicated by dotted lines in said figure. One of the centers—for example, the left-hand one K—passes through and

slides lengthwise in a bearing-hole in the lower part of its slide I and is pressed inwardly by a coil-spring  $k'$ , surrounding the center and bearing at one end against a pin or part of the center and at its opposite end against the head of a hollow cap  $k^2$ , screwed on a threaded boss on the center slide. By adjusting the cap  $k^2$  the pressure of the spring can be regulated as desired. The other center or pivot  $K'$  (see Figs. 7 and 9) is also arranged to slide lengthwise in a hole in the lower part of its slide  $I'$ , but is positively adjusted in and out by an adjusting-nut  $k^3$ , which is screwed on a threaded stud projecting from the slide, and has an annular flange  $k^4$  extending into an annular groove in a head  $k^5$  at the outer end of the center pivot. This construction is desirable, as the center moves easily without binding and can be located at the lowest part of the slide and close to the work, thus enabling the center to engage directly with the thin film-frame, while the center adjusting-nut  $k^3$  is located higher above the work, where it can be more readily grasped and operated. The flange  $k^4$  of the nut is preferably graduated and coöperates with an index-pointer  $k^6$ , projecting from the slide, to enable an exact adjustment of the center. The slide  $I'$  preferably has a split bearing-boss  $l$  surrounding the center, which is tapered and screw-threaded. A nut  $l'$ , working on this threaded boss, serves to contract the same about the center and prevent looseness of the latter in its bearing.

The use of the apparatus is well understood. The guide-bar  $F$  can be set at the proper height by raising or lowering its supporting-brackets  $E$  on the standards  $D$ , and the latter can be moved along the guides  $a$  and secured to place the guide-rod in the desired position over the work. The center supports are then moved toward or from each other on the guide-bar and secured by their clamps and the centers properly adjusted to engage and hold the film-frame. The center  $K$  is held by its spring in contact with the film-frame, and a fine adjustment of the latter in either direction laterally can be effected by adjusting the other center  $K'$  in or out in the usual manner. The spring center also allows the frame to be attached and detached without disturbing the adjustment of the other center. The fine adjustment of the film-frame forwardly and rearwardly is accomplished by turning the adjusting-nuts for the center slides.

The film-frame is necessarily light and slender and as ordinarily constructed is frail and easily broken. By constructing the frame as shown in Figs. 1 and 3 its strength and durability are increased without adding materially to its weight and size. The frame is composite in character, consisting of a jointless rectangular metal frame  $c'$  of light metal, such as aluminium, of angle shape in

cross-section, and a frame or filling of wood or the like material  $c^2$ , which is tightly fitted in the metal frame and retained in place between the flanges of the latter. The film is glued and tacked to the wooden filler, which thus offers the same facilities for attaching the film as the all-wood frame, while the composite frame is practically indestructible.

I claim as my invention—

1. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers supported thereby, of tracks, standards for said guide-bar movable along said tracks and each having a long stationary clamp-plate which bears against one side of one track, a long clamp-plate hinged to said stationary clamp-plate to swing toward and from the opposite face of said track, and a screw for operating said hinged clamp-plate to grip the track, substantially as set forth.

2. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers supported thereby, of tracks, standards for said guide-bar movable along said tracks and each having a long stationary clamp-plate which bears against one side of one track and is provided at its ends with lugs which bear on top of said track, a long clamp-plate hinged to the upper portion of said stationary clamp-plate to swing toward and from said track, and a screw having a threaded engagement with a portion of said stationary clamp-plate and bearing against a portion of said hinged clamp-plate, substantially as set forth.

3. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers supported thereby, of adjustable supports for said guide-bar each comprising a standard, a bracket movable vertically on said standard, and a clutch device which secures said bracket in different positions on the standard, said bracket being released and moved in opposite directions by pressure on said clutch device in the direction of desired movement of said bracket, substantially as set forth.

4. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers supported thereby, of adjustable supports for said guide-bar each comprising a standard, a bracket movable vertically on said standard, a clutch device carried by said bracket and engaging said standard, and a spring which moves said clutch device in one direction to hold the bracket from movement, said clutch device being moved by pressure in the opposite direction to release said bracket and permit its movement, substantially as set forth.

5. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers supported thereby, of adjustable supports for said guide-

bar each comprising a standard having an upright post, a clutch-sleeve slidable on said post and extending into a tapering cavity in said bracket, one or more clutch-balls confined in holes in said clutch-sleeve and adapted to bear against said post and the wall of said cavity, and a spring which moves said clutch-sleeve in a direction to cause said balls to bind between said post and the wall of said cavity, substantially as set forth.

6. In an apparatus of the character described, the combination with a guide-bar, and adjustable frame centers, of a center support movable along said guide-bar, and a securing-clamp for said support comprising a member loosely retained on said support and having an end which bears against one side of said guide-bar, and a screw which has a threaded engagement with the other end of said clamp member and bears against said support at a point substantially opposite the bearing-point of the clamp member on said guide-bar, substantially as set forth.

7. In an apparatus of the character described, the combination with a V-shaped guide-bar, and adjustable frame centers, of a center support movable along said guide-bar, and a securing-clamp for said support comprising a member loosely confined in a hole in said support and having a hook-shaped lower end which embraces one flange of said guide-bar and bears against the bottom of the latter, and a screw which has a threaded engagement with the upper end of said clamp member and bears against said support above said guide-bar, substantially as set forth.

8. In an apparatus of the character described, the combination with a guide-bar, of a support adjustably secured to said guide-

bar and having a portion projecting out from said bar, a guide connecting the outer end of said projecting portion with the body of said support, a slide movable on said guide toward and from the guide-bar, a screw fixed on and projecting from said slide, a rotatable nut detachably engaged with and held from longitudinal movement on the outer end of said projecting portion of the support and having a screw-threaded engagement with said screw, and a center movable on said slide in a direction transversely of the direction of movement of the slide, substantially as set forth.

9. In an apparatus of the character described, the combination of a support, means for adjustably supporting the same, a slide adjustable on said support, a center mounted on the lower part of said slide to move lengthwise in a direction transversely of the direction of movement of said slide, and adjusting means for said center comprising a rotatable part having a screw-threaded engagement with said slide and having an annular flange engaging a part of said center, substantially as set forth.

10. In an apparatus of the character described, a composite film-frame comprising a jointless metal frame, the bars of which are of angle shape in cross-section, a filling confined between the flanges of said metal frame, and a film stretched on said frame and attached to said filling material, substantially as set forth.

Witness my hand this 6th day of March, 1905.

JOHN J. DRUMB.

Witnesses:

MARTIN C. DRUMB,  
JOHN F. MONNEN.