Sept. 6, 1938. R. H. DRAEGER 2,128,920

BOOK SUPPORT

Filed Dec. 2, 1935 2 Sheets-Sheet 1

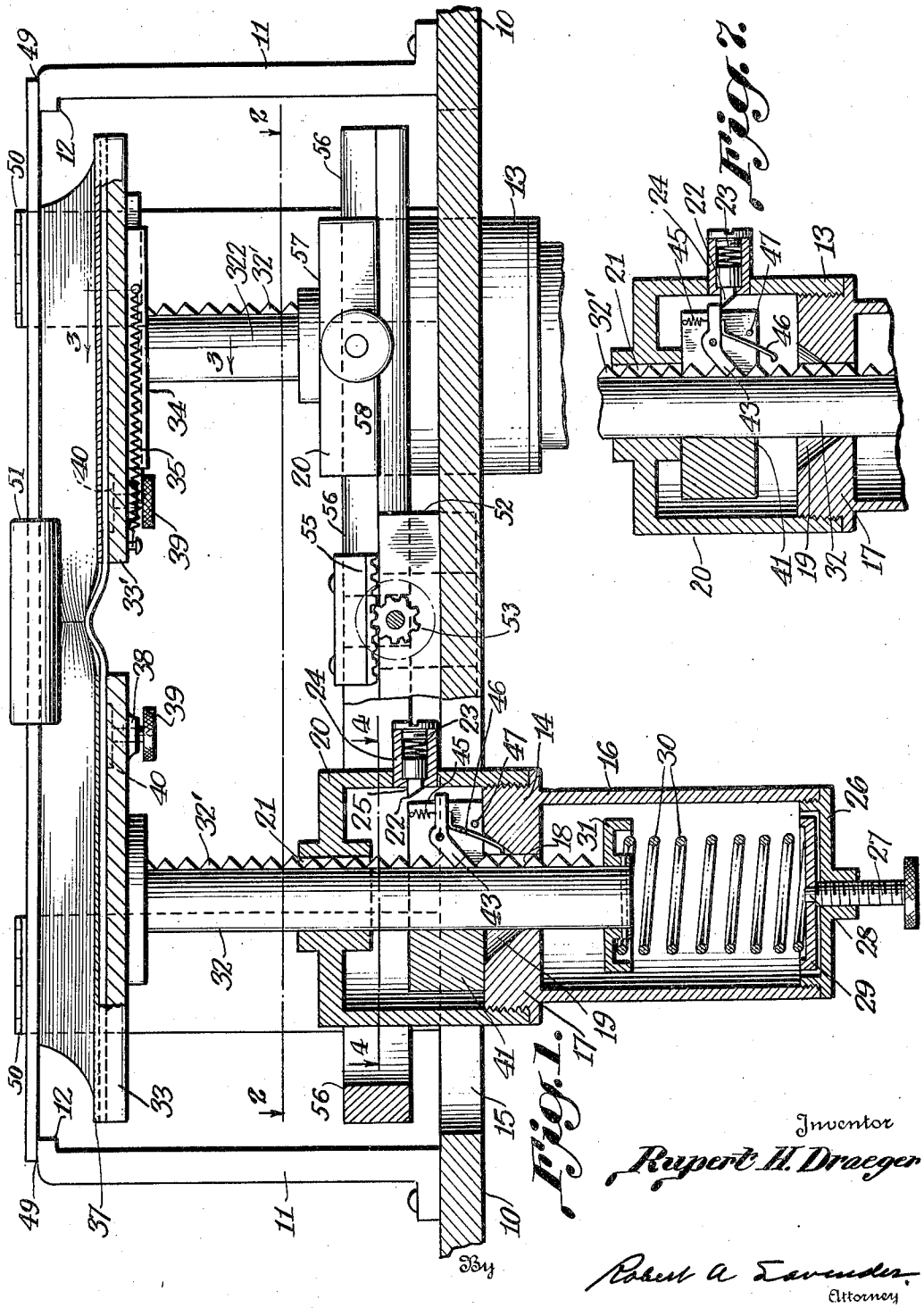


Fig. 1.

Fig. 2.

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Fig. 2.

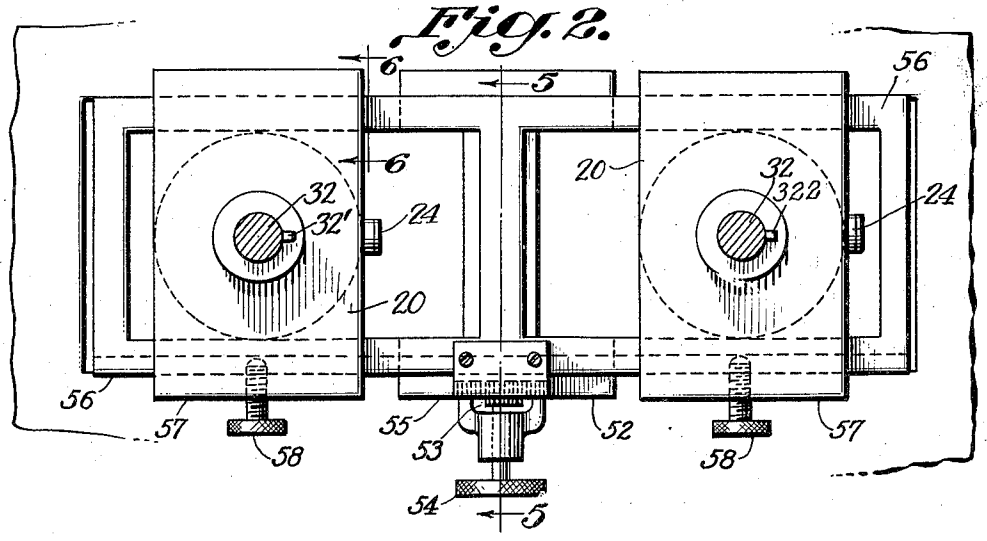


Fig. 3.

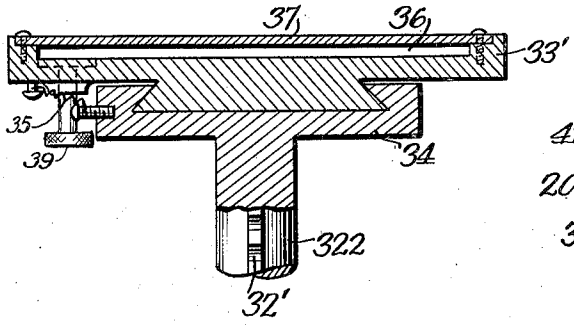


Fig. 4.

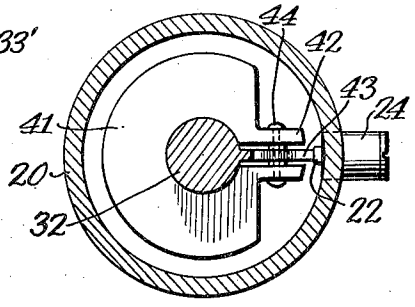


Fig. 5.

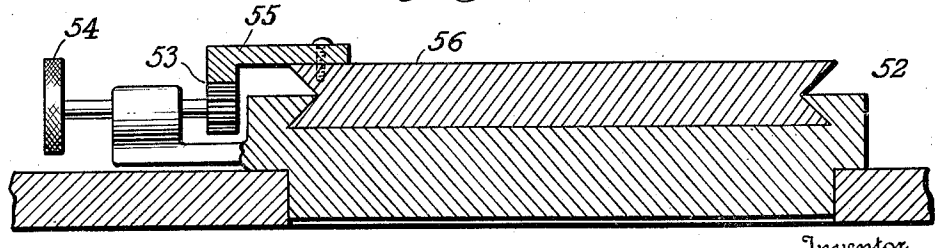
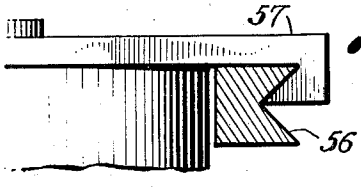


Fig. 6.



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UNITED STATES PATENT OFFICE

2,128,920

BOOK SUPPORT

Rupert H. Draeger, United States Navy

Application December 2, 1935, Serial No. 52,517

4 Claims. (Cl. 45—86)

(Granted under the act of March 3, 1883, as amended April 30, 1928, 370 O. G. 757)

This invention relates to book supports and more particularly to book supports intended for holding books in a position convenient for photographing them.

The book support of this invention is adapted to be mounted in a table top, though it may itself be mounted as a table.

The primary object of this book support as a part of photographic equipment is to provide a support which, regardless of the location of the pages in the book being photographed, will always keep the two pages of the open book in a single plane, thus permitting a perfectly focused image to be recorded in the camera, regardless of which section of the book is being photographed and without changing the focus of the camera. This object may be accomplished without damage to a thick book only when provision is made to support the front and back covers at variable levels. With this arrangement the book may be opened sufficiently to permit the pages to lie flat as near to the spine of the book as the printing is commonly carried. The great advantage of this will be appreciated by all who have had to use photographs of book pages where the portions of the lines near the spine were distorted, curved, out of focus and reduced in size. Scale drawings from books improperly opened and held while being photographed obviously are no longer proportioned to any constant scale throughout the sheet.

A further object of this invention is to provide a transparent cover for the exposed pages which will hold the pages flat, and at the same time be readily manipulatable so that pages may be turned easily. This cover or platen may include a fixed or adjustable mask, whereby a neat border may be obtained and extraneous material including the edges of the book may be excluded.

Another object is to provide means for moving the book and support so as to center the whole, or the part being copied, in the photographic field.

Still a further object is to separately support the two sides of the open book by means which recede to the proper level automatically when pressure is exerted on the top of the book by the flat platen or cover glass, and which also will keep the book under only a pressure which may be regulated. A special feature incorporated in each support individually is a means that permits the support to be raised step by step, to a higher level merely by pushing slightly on the support and then releasing it.

In the accompanying drawings like numbers refer to like parts in which:

Fig. 1 is an assembly elevation partly in section showing a book held in position to be photographed.

Fig. 2 is a plan view of the portion below line 2—2 of Fig. 1.

Fig. 3 is an elevation in section of the top of one of the supports showing the book cover holder and the keyed track for lateral adjustment at line 3—3 of Fig. 1.

Fig. 4 is a plan view of the ratcheted support rod and free pawl ring below line 4—4 of Fig. 1.

Fig. 5 is an elevation section at line 5—5 of Fig. 2 showing the keyed track for lateral adjustment of the entire book and supports.

Fig. 6 is an elevation at line 6—6 of Fig. 2 showing in section another lateral adjustment track.

Fig. 7 is an elevation, partly in section, of the other position of the free clamp ring shown on the ratcheted support rod in Fig. 1.

The construction and operation of a preferred embodiment of this invention will readily be understood from the drawings and from the following description which refers to the drawings.

Base 10 supports stops 11 which have inwardly turned flanges 12 at their top edges. Through base 10 are mounted cylindrical chambers 13 and 14 which may be moved laterally in the aperture 15 of said base. Chambers 13 and 14 are identical in construction and are formed by screwing lower chamber 16, having a head 17 which contains aperture 18 with countersunk recess 19, into the upper chamber 20 which has an aperture 21 in its top.

A bevel catch 22 is normally held by its enlarged head in an inward position by a spring 23 confined in a radially extending tube 24 having aperture 25 through which the bevel catch penetrates the upper chamber 20. The bottom of the lower chamber 16 is closed by a threadedly secured cap 26. Cap 26 has a centrally located threaded aperture into which knurl headed screw 27 is adjustably fixed, said screw having a short shaft 28 on its inner end that penetrates an aperture in the center of a circular cup member 29.

Upon the cup member 29 is floated a helical compression spring 30 the upper end of which bears against a circularly grooved member 31 which is secured to the lower end of the cylindrical ratcheted rod 32. The ratchets 32' on rod 32 are formed in the shape of 90° isosceles triangles having their altitudes in a radial direc-

tion. The ratcheted rod 32 extends upwardly from the lower chamber 16 through the upper chamber 20 and into the inclosure within the stops 11 having platen 33 mounted on its upper end.

The platen 33 is secured to the ratcheted rod 32 while platen 33', a cross section of which is shown in Fig. 3, is slideably mounted in track 34 which is mounted on the head of the other ratcheted rod 322. Platen 33' has attached thereto one end of spring 35 the other end of which is secured to track 34, said spring being adapted to pull said platen away from the position nearest the center of the device, thus tending to stretch open a book secured to the platens. Both platens 33 and 33' are formed with a shallow but wide groove 36 extending the full length of the platen and covered by plate 37 so as to form a pocket into which the cover of a book may be slipped. The platens also have bosses 38 extending from their under sides into which knurl headed screws 39 are threaded. A small bearing plate 40 is rotatably mounted on the inner ends of said screws so that when a book's cover is slipped into the space formed at 36 it may be clamped by pressure between cover 37 and bearing plate 40.

Within the upper chambers 20 and mounted around each of the ratcheted rods is a floating member 41 a plan view of which is shown in Fig. 4. This floating member 41 has vertical flanges 42 extending approximately radially and within which is pivoted pawl 43 on shaft 44 and normally held out of ratchet engaging position by helical spring 45 secured to said pawl and said flanges. Leaf spring 46 is so attached to pawl 43 that when the floating member 41 is in the low position shown in Fig. 1 said leaf spring action against the wall of recess 19 throws pawl 43 into ratchet engaging position.

Fig. 7 shows pawl supporting ring member 41 in the normal position, i. e. the position in which it is maintained by helical spring 30 when no pressure is being exerted on the platen 33 or 33'. From this view it is apparent that when a short downward push of a distance equal to at least half of the length of a ratchet tooth, is given to the platen, catch 22 will aid in dislodging pawl 43 from its ratchet engaging position, said pawl rotating about its pivot 44 until leaf spring 46 touches stop pin 47. The small helical spring 45 so holds the pawl, thus permitting floating member 41 to fall to the position shown in Fig. 1. Just before reaching this position leaf spring 46 touches the slanting wall of the countersunk recess 19 causing pawl 43 to pivot to ratchet engaging position, the weight of floating member 41 being sufficient to overcome the opposition offered by spring 45 to such rotation.

During the fall of floating member 41 the pressure necessary for the previously mentioned platen push must be maintained in order that the mechanism may raise the platen by a predetermined amount when the pressure is released. This time, of course, is but a fraction of a second, at the end of which the pawl is again engaging the ratchet teeth, but several teeth lower down. When the external pressure is then released from the platen, helical spring 30 raises the ratchet rod, platen and floating member 41 until the top of floating member 41 bears against the under side of the top of chamber 20. If it is desired to push the platen down beyond the position it occupies when the floating ring member 41 rests on top of chamber 16, as shown in Fig. 1, it is only necessary to exert additional downward pressure on the platen. In this manner the pressure exerted by spring 46 holding pawl 43 in engagement with ratchet 32' will be overcome and the pawl will be pivoted out of ratchet engaging position thereby permitting the ratchet to slide into the desired position. Hence, from any position, the platens may either be pushed down or raised by merely pushing down slightly and then releasing, thus permitting the platen to rise step by step.

The possible operations just described permit great ease in keeping the open portion of a book being photographed in one horizontal plane, namely, the plane upon which a camera is focused. A cover glass bears down upon the opened pages and comes to rest as shown at 49. It is hinged at 50 and has a handle 51 directly in front of the operator. The elevation of the hinges 50 and the tops 12 of the stops 11 determine the previously mentioned plane of focus.

Now if the operator merely sets the platens high enough before placing the open book's covers in them the first time that the cover glass is brought down upon the book the platens will recede to the exact level of the plane of focus and at the same time pawl carrying member 41 will be placed in the position shown in Fig. 1. Then after the exposure is made the cover glass is raised and the platens rise due to the action of spring 30 to lift the book a distance equal to the travel which member 41 may take before it reaches the upper side of chambers 20. If now a sufficient number of pages are turned before the next exposure the platen carrying the added pages will, of course, recede to a lower level to accommodate the added thickness and the less thick side will not recede as far as it raised, thus keeping both sides under pressure and in the correct plane when the cover glass is brought down.

Other desirable features of this invention are the lateral adjustments possible. These are most necessary for centering the book in the field of the camera and for keeping it centered as printed pages shift in position while progressing through the book from cover to cover. In Fig. 2 is shown the H-shaped member 52 carrying gear 53 which may be turned by knurled wheel 54 to move rack 55 secured to frame 56 which is adapted to slide laterally in said H-shaped member 52 as shown in Figure 5. This adjustment permits both platens and the book to be moved in unison. In Figure 6 is shown a mechanism whereby either platen may be separtely moved in a lateral direction by sliding member 57 which carries the chambers 13 and 14, on the top of the frame 56. When the lateral location of the platens is properly adjusted for any given book it may be secured by tightening the set screws 58.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A book support having parallel platens, each platen having a surface adapted to support a portion of an open book, means for mounting one of said platens and means for mounting the other platen, each for independent movement at right angles to the supporting surface of said platens, a member to which each of the aforesaid means are fixed, a frame upon which said member is movably mounted, and means for moving said member with respect to said frame and at right angles to said movement of said platens thereby

to move said platens and their mountings in unison.

2. A book support according to claim 1 and in which each means for mounting said platens for independent movement at right angles to the supporting surface comprises a vertical rack to the top of which the platen is fastened, a coiled spring on which the bottom of the rack rests, a chamber enclosing a portion of the rack intermediate its ends, said rack being longitudinally movable with respect to said chamber, a block loosely mounted on said rack within said chamber, a spring pressed pawl pivotally mounted on said block in cooperative relation with said rack, a stop pin on said block limiting the rotation of the pawl out of engagement with the rack, and a spring-pressed catch projecting from the side wall of said chamber and adapted to engage said pawl.

3. A book support having parallel horizontal platens, each platen having a surface adapted to support a portion of an open book, a vertical rack to the top of which a platen is fastened, resilient means urging upward said rack, a chamber enclosing a portion of the rack, a block loosely mounted on said rack within said chamber, a spring-pressed pawl pivotally mounted on said block in cooperative relation with said rack, a stop pin on said block limiting the rotation of the pawl out of engagement with the rack, and a spring-pressed catch projecting from the side wall of said chamber and adapted to engage said pawl.

4. A book support having parallel horizontal platens, each platen having a surface adapted to support a portion of an open book; for each platen: a vertical rack to the top of which the platen is fastened, a coiled spring on which the bottom of the rack rests, a chamber enclosing a portion of the rack intermediate its ends, said rack being longitudinally movable with respect to said chamber, a block loosely mounted on said rack within said chamber, a pawl pivotally mounted on said block, said pawl having one leg in cooperative relation with said rack and a second leg, a coiled spring having one end attached to said block and the other end to the upper face of the second leg and tending to rotate said pawl out of engagement with said rack, a curved leaf spring having one end attached to the under side of the second leg, a stop pin on said block limiting the movement of said leaf spring and thus the rotation of the pawl out of engagement with the rack, the free end of the leaf spring projecting below said block in cooperative relation with a slanting pocket in the bottom of said chamber, and a spring-pressed catch projecting from the side wall of said chamber and adapted to engage the under side of the second leg.

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