No. 770,219. PATENTED SEPT. 13, 1904.

F. B. CASE.

LOCK FOR ROTATING SHAFTS.

APPLICATION FILED FEB. 4, 1904.

NO MODEL.

FIG. 1.

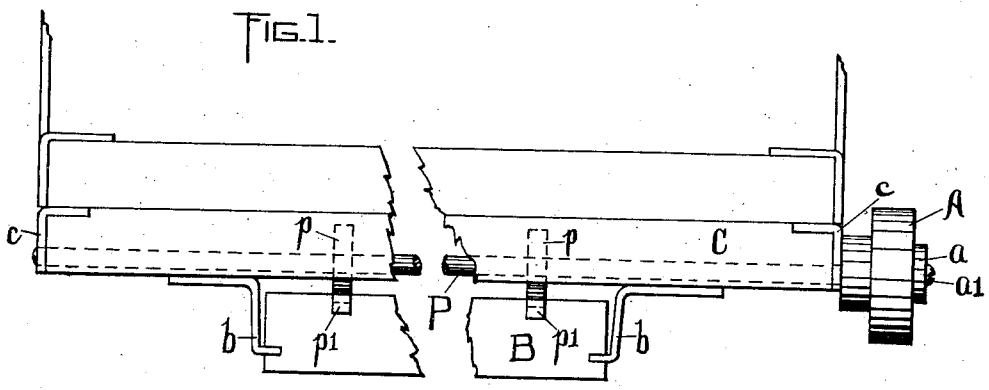


FIG. 6.

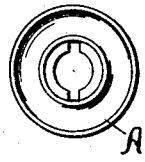


FIG. 7.

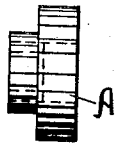


FIG. 2.

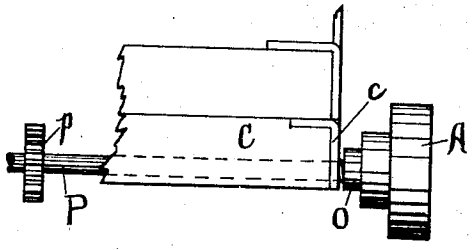


FIG. 5.

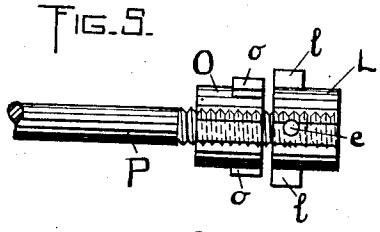


FIG. 3.

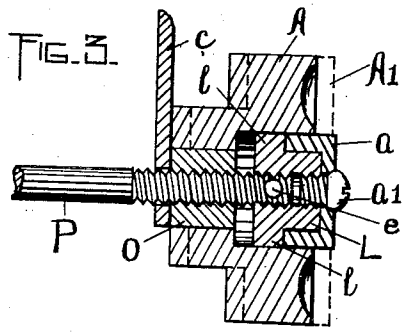
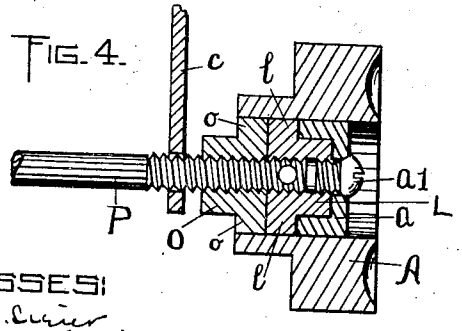


FIG. 4.



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No. 770,219. Patented September 13, 1904.

UNITED STATES PATENT OFFICE.

FRANK B. CASE, OF ROCHESTER, NEW YORK, ASSIGNOR TO SENECA CAMERA COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

LOCK FOR ROTATING SHAFTS.

SPECIFICATION forming part of Letters Patent No. 770,219, dated September 13, 1904.

Application filed February 4, 1904. Serial No. 191,988. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. CASE, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Lock for Rotating Shafts and other Similar Uses, of which the following is a specification.

This invention relates to means for locking a revoluble shaft against rotation when desired, so that such shaft may be rigidly held in any desired position of angular adjustment after any desired number of rotations or any fraction of a rotation thereof in either direction.

For the purpose of locking revoluble shafts it has heretofore been quite customary to make use of a jam-nut for forcing an operating-head on the shaft against a fixed surface which would oppose the rotation of such head and the shaft carrying the same. In the use of such a device it frequently occurs that the friction between the jam-nut and the operating-head results in a slight rotation of the head sufficient oftentimes to disturb the desired adjustment. Again, in the act of adjusting delicate mechanisms the attention of the operator is usually directed to the mechanism itself, and thereby distracted from the locking mechanism in such a way that it often occurs that the wrong device is operated. The use of such mechanism has frequently met with the objections above stated, which it is the purpose of the present invention to overcome, the object being to provide an operating-head which by the character of the motion imparted to it shall control a locking mechanism without operating in any way to distort the desired adjustment in the process of locking the parts.

With this object in view my invention consists, essentially, in the following features: a shaft rotatable in its bearings, an operating-head, and mechanism whereby the rotation of such head may carry the shaft with it or not, as desired. This result may preferably be accomplished by means of the well-known keyway and key, the key having a clearance, permitting the rotation of the operating-head without carrying the shaft with it when in one position of its longitudinal adjustment on such shaft and necessitating the revolution of such shaft with such head when in its other position of longitudinal adjustment thereon. When the operating-head is longitudinally adjusted so as to permit of its rotating independently of the shaft, it is arranged to operate a screw mechanism, so as to rigidly lock the shaft or some part carried thereby against a fixed surface, and thereby prevent the rotation thereof.

The accompanying drawings illustrate that embodiment of my invention especially adapted to use in connection with the relatively slidable elements of a photographic camera—as, for instance, a camera frame or box upon the bed, a rack-and-pinion mechanism serving to adjust the camera box or frame upon the bed for the purpose of focusing—and with my locking device serving to rigidly lock the elements together in any desired position of adjustment.

Such drawings are as follows: Figure 1 is a view from the rear of a portion of a camera-bed and camera-box equipped with my mechanism with the operating-head in the position for locking the parts. Fig. 2 shows a portion of the operating-shaft carrying a pinion, the operating-head thereon in the position for unlocking the parts. Fig. 3 is a vertical section through the operating-head and its connections with the shaft with such shaft shown in full and with the parts in the position they assume when locked, showing also in dotted lines at A′ the other extreme position of the operating-head for this condition of the parts. Fig. 4 is a view similar to Fig. 3, but shows the parts in their relative positions when unlocked. Fig. 5 is a view of the connecting parts between the shaft and the head and with such head removed. Figs. 6 and 7 are face and side views, respectively, of the operating-head removed.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, B is the bed of a camera, and C the base-piece of the camera-box, having secured to the ends thereof the

brass plates *c*, which constitute bearings for the shaft P. On this shaft P are secured the pinions *p*, arranged to engage and mesh the teeth of the rack *p'*, secured to the bed B. To this base-piece C are secured angular plates *b*, arranged to engage suitable grooves therefor in the bed B. The parts as thus far described are usual in cameras and similar mechanisms and no further description thereof is necessary herein. This shaft P is threaded, as indicated, at its extreme right end and beyond the bearing therefor in the plate *c*, and suitably threaded internally, so as to work freely thereon, is seen the nut O, having thereon the lugs or keys *o*. A second and similar nut L is also threaded onto this shaft P and secured thereon against angular motion by means of a pin *e*. This nut L has ears or lugs *l* thereon.

The operating-head A is bored out internally at its left-hand face to receive and freely turn on the round or cylindrical portions of the nuts O and L, and in this inner bore of the head A are channeled suitable keyways to receive the lugs *o* and *l* on the nuts O and L. This head A is chambered or bored out internally on its right-hand or outer face to permit of its rotating freely without or beyond and independently of the lugs *l* on the nut L, when such head A is moved to the left far enough, so that its smaller bore shall clear the lugs *l* on the nut L, and when in this position the head A may be turned, so as to revolve independently of the shaft P and the nut L secured thereon; but at this time the rotation of the head A causes a rotation of the nut O, which by reason of its being threaded upon the shaft P is carried longitudinally as well as rotated upon the shaft P until it contacts with the plate *c*, and is forcibly pressed against such plate in such a way as to lock the shaft P against rotation. This operating-head A then when moved to the left far enough to be disengaged from the nut L becomes, in connection with the nut O and the shaft P, a jam-nut, serving thus to rigidly lock the shaft P against angular motion. At this time then turning the operating-head A over to the left until the nut O is forced against the nut L results in unlocking the shaft P. Then at any time thereafter when the lugs *o* are in alinement with the lugs *l* the head A may be drawn to the right, so as to engage and carry with it both the nuts O and L, and at this time the operating-head A serves upon being rotated in either direction and no matter how long or how many turns so long as the head A is held to the right to operate and freely rotate the shaft P. It is desirable that the lugs *o* and the lugs *l* should be in alinement when the nut O is screwed outwardly against the nut L. This permits of the head A being unscrewed as far as possible without the rotation of the shaft P, and when such rotation of the shaft P commences then the head A may be drawn to the right, so as to engage the lugs *o* and the lugs *l* and cause all the parts to rotate exactly together. A screw *a'* and cap *a* serve in the manner indicated to retain the head A against removal to the right.

What I claim is—

1. In combination with a revoluble shaft and its bearings, an operating-head for such shaft and connections between such head and such shaft whereby such head may be adjusted longitudinally relatively to such shaft so as to rotate such shaft therewith or not as desired and means whereby the rotation of such operating-head independently of rotation of such shaft serves when in one direction to lock said shaft against rotation and when in the other direction to unlock said shaft and permit rotation thereof.

2. In combination with a revoluble shaft and its bearings, an operating-head therefor longitudinally adjustable on such shaft, connections between such shaft and such operating-head whereby for one position of such head a rotation thereof rotates such shaft with it and whereby also for the other position of such head such head may be rotated independently by such shaft and means whereby such independent rotation of such head clamps a surface carried by such shaft against a fixed surface so as to prevent rotation of such shaft.

3. In combination with a revoluble shaft and its bearings an operating-head therefor longitudinally adjustable on such shaft, connections between such head and such shaft whereby such head may be rotated when in one position of adjustment independently of rotation of such shaft and whereby also for the other position of such head a rotation thereof carries such shaft with it, a threaded mechanism arranged to be actuated by such head when revoluble independently of such shaft and operating to clamp the surface carried by such shaft against a fixed surface so as to prevent rotation of such shaft.

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