

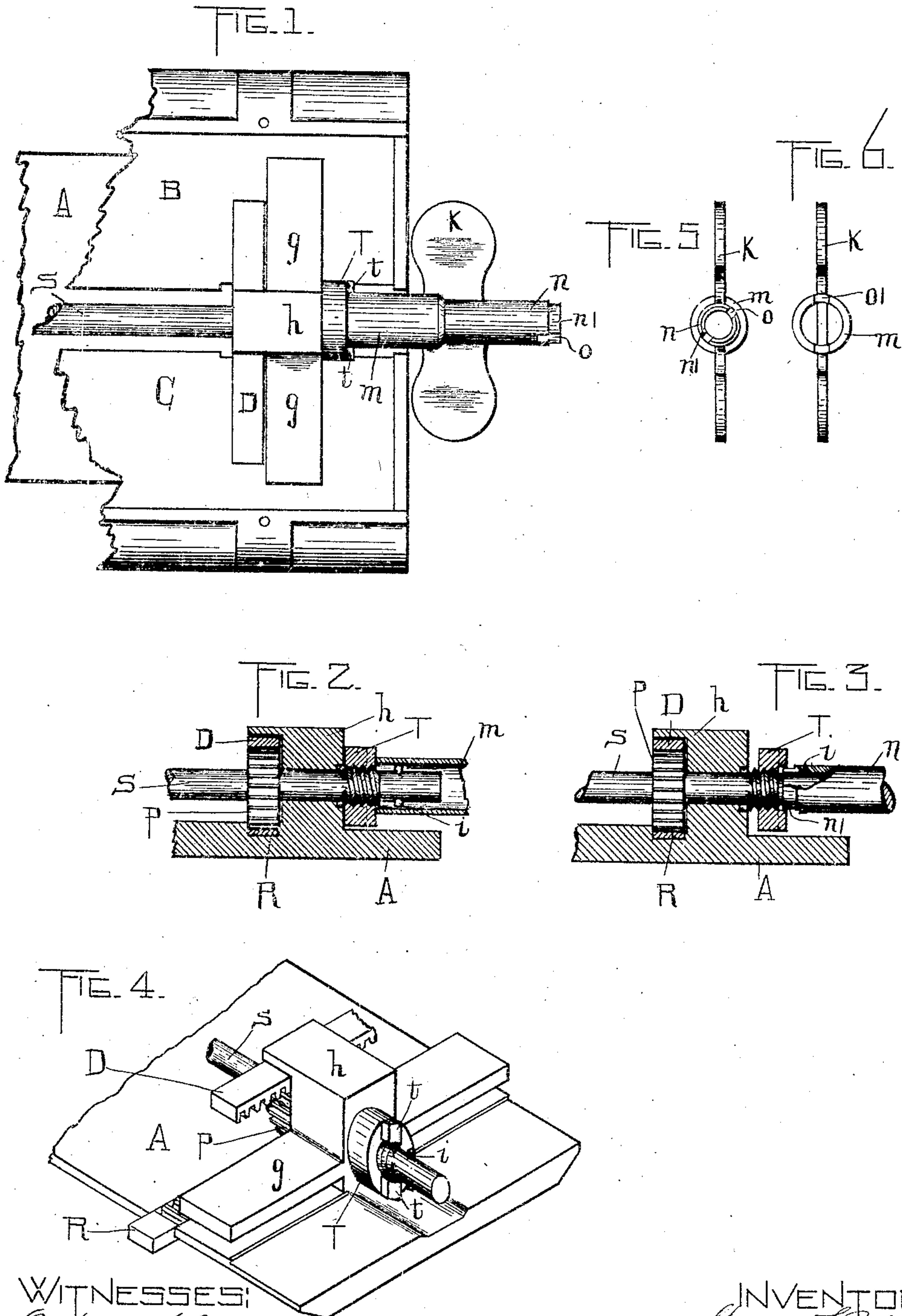
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H. J. MOORE.

LOCKING MECHANISM FOR THE OPERATING DEVICES OF LOOSE LEAF BINDERS.

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LOCKING MECHANISM FOR THE OPERATING DEVICES OF LOOSE-LEAF BINDERS.

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To all whom it may concern:

Be it known that I, HENRY J. MOORE, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a new and Improved Locking Mechanism for the Operating Devices of Loose-Leaf Binders, of which the following is a specification.

My present invention relates to means for locking the rotating shaft constituting the main or one of the main operating members or elements of a loose-leaf binder. It is immaterial whether such a rotating element carry gear wheels or pinions engaging suitable racks or whether such operating member be threaded and arranged to engage by means of the threads thereon any suitable cooperating nuts or threaded members, an essential requirement, however, being that the rotating element shall be revoluble in one or more suitable bearings and prevented from more than a moderate amount of end chase in order that a locking jam-nut may be clamped when desired against a suitably-fixed surface. It is preferable that such a jam-nut be threaded onto the shaft and of course capable of a longitudinal movement thereon at least somewhat in excess of the end chase of the shaft—that is, the movement of the jam-nut on the threaded portion of the shaft should be such as to somewhat more than compensate for the end chase of the shaft.

My invention consists more especially in means for operating such a jam-nut when desired by means of one end of an operating head or key, the other end of which is arranged to engage a suitable cooperating device on the shaft proper in such a way that such shaft may be rotated with such operating key or head, while when such key is turned the other end to it will not engage the cooperating device just mentioned, whereby such shaft may be rotated, but will engage only the lock or jam nut in such a way as to cause it to rotate, when it is of course moved longitudinally upon the threaded portion of the

shaft in such a way as to lock the shaft against rotation or unlock it and permit rotation thereof, as desired.

My invention consists in a rotating shaft having means thereon for operating the loose-leaf binder with a jam-nut on the threaded portion of such shaft, such jam-nut carrying members cooperating with a suitable operating-head on such key, whereby such jam-nut may be turned in either direction without rotation of the shaft, and such shaft-carrying members cooperating with a suitable operating-head on such key, whereby such shaft may be turned independently of rotation of such jam-nut except as carried by, on, and with such shaft. It is preferable though not essential that a single key having two operating ends be used in connection with my locking device.

The accompanying drawings, illustrating an embodiment of my invention, are as follows:

Figure 1 is a plan view of the operating end of a loose-leaf binder-frame. Fig. 2 shows the bearing *h* and a portion of the back plate *A* in vertical section and shows also in a similar section the jam or locking nut *T* in its operative position and also the end *m* of the operating-key *K* in a similar section. Fig. 3 is a view similar to Fig. 2, but shows the locking-nut *T* in its inoperative position and with the other end *n* of the operating-key inserted over the shaft *S* and partially broken away to show its cooperation with the pin *i* in the shaft *S*. Fig. 4 shows a portion of the back plate *A* with the bearing *h* extending upwardly therefrom and with a portion of the shaft *S* carrying the pinion *p* in engagement with the racks *D* and *R*. In this figure the jam-nut *T* is shown in its operative position. Figs. 5 and 6 show opposite end views of the operating-key *K*.

Similar letters refer to similar parts throughout the several views.

In the drawings, *A* represents the back plate of a binder, and *B* and *C* the cover-plates arranged to slide to and from each other in the usual way in suitable guiding mechanism on the

back plate A. Projecting outwardly from this back plate A are suitable bearings, such as *h*, of which there are usually two for the shaft S, which constitutes the operating-shaft of the binder. On this shaft S and preferably at each end thereof are located pinions *p*, arranged to engage racks D and R, connected to opposite cover-plates B and C, respectively, whereby the rotation of the shaft S causes the cover-plates B and C to move to and from each other, as desired, in the usual way. The essential feature of my present invention consists, then, in means for locking this shaft S against rotation in either direction. Such locking means comprises the jam or locking nut T, having axially-projecting lugs *t* thereon, arranged to be engaged by the suitable notches therefor *o'* in the larger end *m* of the operating-key K. This operating end *m* of the key K is tubular, as seen, and has two notches cut therein for engagement with the lugs *t*, seen on the right-hand side of the jam-nut T. The bore of this larger head *m* of the key K is such as to permit of its being readily inserted over the pin *i*, extending through the shaft S and outwardly therefrom on opposite sides in radial lines to a short distance, as seen in the drawings. The smaller end *n* of the key K is also tubular and has notches *o* therein for engaging the projecting ends of the pin *i*, whereby the shaft S may be turned when the smaller end of the key K is inserted thereover with the pin *i* in engagement with these notches *o*. The smaller end *n* of this key K has a slight tubular extension *n'* of reduced diameter, as seen in Figs. 1 to 3 and 5, arranged to enter slightly within the right-hand face of the jam-nut T. When the larger end *m* of the key K is inserted over the shaft S with the notches *o'* in engagement with the lugs *t* on the right-hand face of the jam-nut T, this jam-nut T may be turned in either direction independently of rotation of the shaft S, whereby such shaft S may be locked against rotation, as the jam-nut T is screwed against the bearing *h*, which is thus clamped between the pinion *p* and the jam-nut *t* on the shaft S. Turning this key K to the right or clockwise serves to lock the shaft S and in the opposite direction to unlock the shaft S. By inserting the smaller end *n* of the key K over the end of the shaft S, with the notches *o* in engagement with the pin *i*, the shaft S may be turned in either direction, the jam-nut T having of course been previously loosened, when upon the withdrawal of the key K and the insertion of the locking end *m* thereof in the way already described the shaft S may be locked against rotation, with the cover-plates B and C any desired distance apart. Guides *g* are provided for guiding the cover-plates B and C on back-plate A.

It will of course be understood that the right-hand face of the jam-nut may have the

projections *t* thereon of any desired conformation, different for each different binder, such that there may be provided a large number of different keys no one of which will properly fit any unlocking mechanism except the one for which it is especially made, whereby the operating mechanism may be locked and operable only by the party having the proper key.

Attention is especially called to the fact that my locking mechanism does not necessitate the elongation of the operating-shaft and its extension outwardly beyond the end of the binder-frame. Neither does it necessitate an enlargement in the diameter of the shaft or any appreciable enlargement in the opening in the binder-frame for the operating-head of the key, because of the peculiar conformation and arrangement of the parts arranged to be engaged by the end surfaces of the operating-key. This I have found an important advantage in such mechanisms.

What I claim is—

1. In a loose-leaf binder, in combination with the binder-frame, an operating-shaft revoluble in bearings carried by such frame, an operating-head on such shaft, a fixed member carried by such binder-frame, a locking member carried by and revoluble with such shaft and opposed to such fixed member and a locking-nut threaded onto such shaft and operating to clamp such fixed and locking members together.

2. In a loose-leaf binder, in combination with the binder-frame, an operating-shaft revoluble in bearings carried by such frame, an operating-head on such shaft, a fixed member carried by such binder-frame, a locking member carried by and revoluble with such shaft and opposed to such fixed member and threaded mechanism arranged to be operated independently of rotation of such shaft and operating to clamp such fixed and locking members together.

3. In a loose-leaf binder, in combination with the binder-frame, an operating-shaft revoluble in bearings carried by such frame, an operating-head on such shaft, a fixed member carried by such binder-frame, a locking member carried by and revoluble with such shaft and opposed to such fixed member, a locking-nut threaded onto such shaft and operating to clamp such locking member carried by such shaft and such fixed member together, such elements of operating-head and locking-nut adapted to be engaged one of them by an actuating member arranged to slip over and operable independently of the other.

4. In a loose-leaf binder, in combination with the binder-frame, an operating-shaft revoluble in bearings carried by such frame, an operating-head on such shaft, a fixed member carried by such binder-frame, a locking mem-

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