

No. 757,336.

PATENTED APR. 12, 1904.

J. L. McMILLAN.  
LOOSE LEAF BINDER.  
APPLICATION FILED SEPT. 18, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

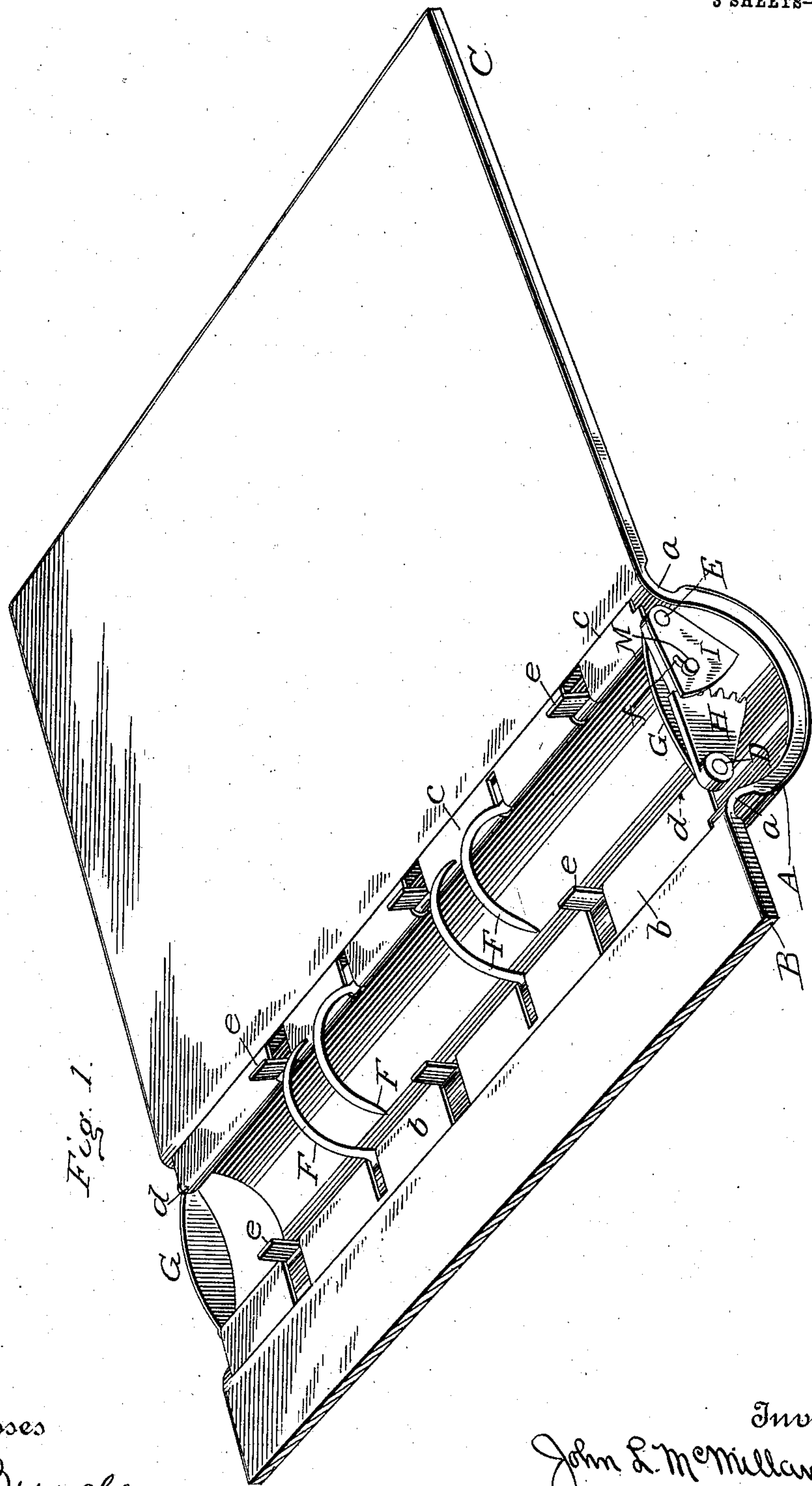


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

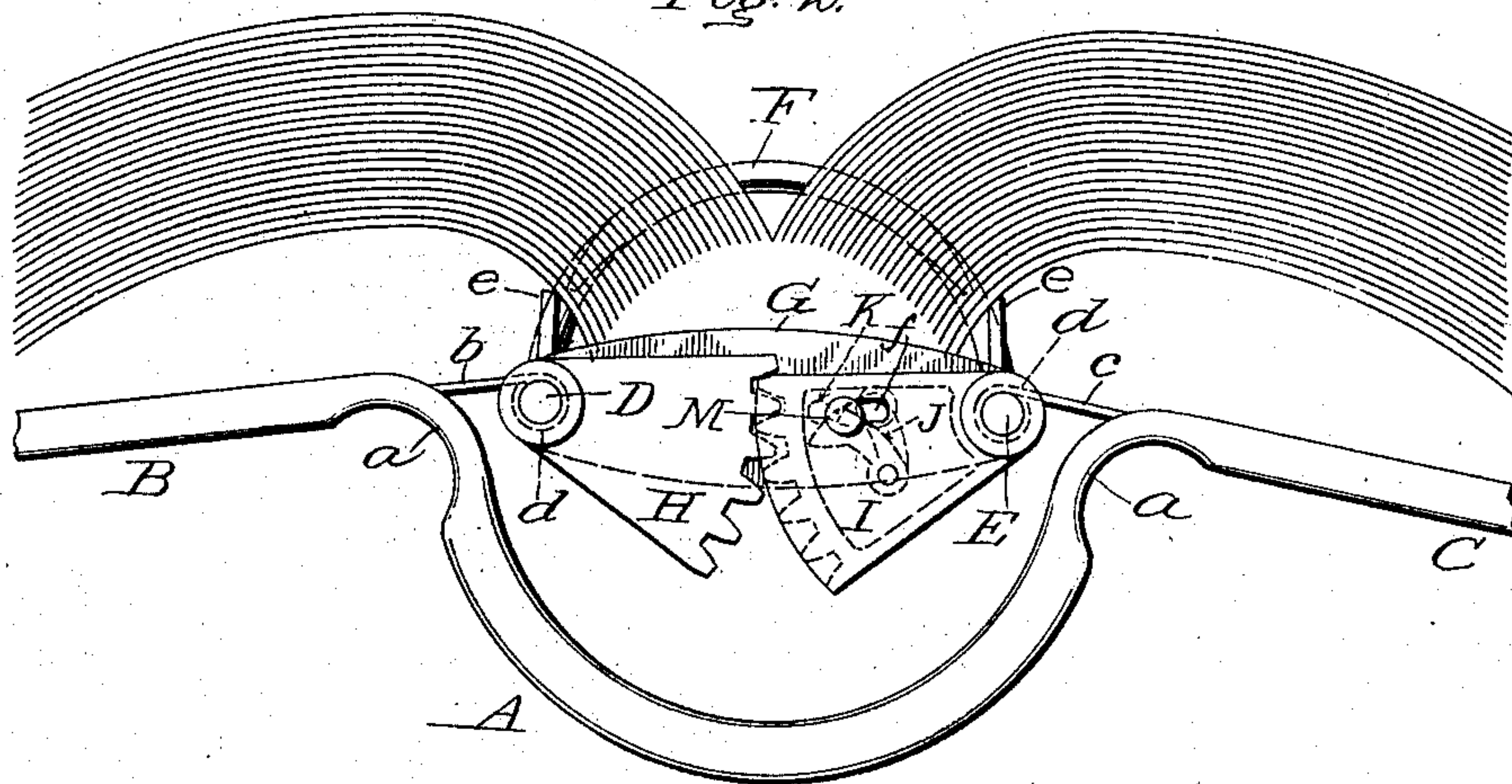


Fig. 3.

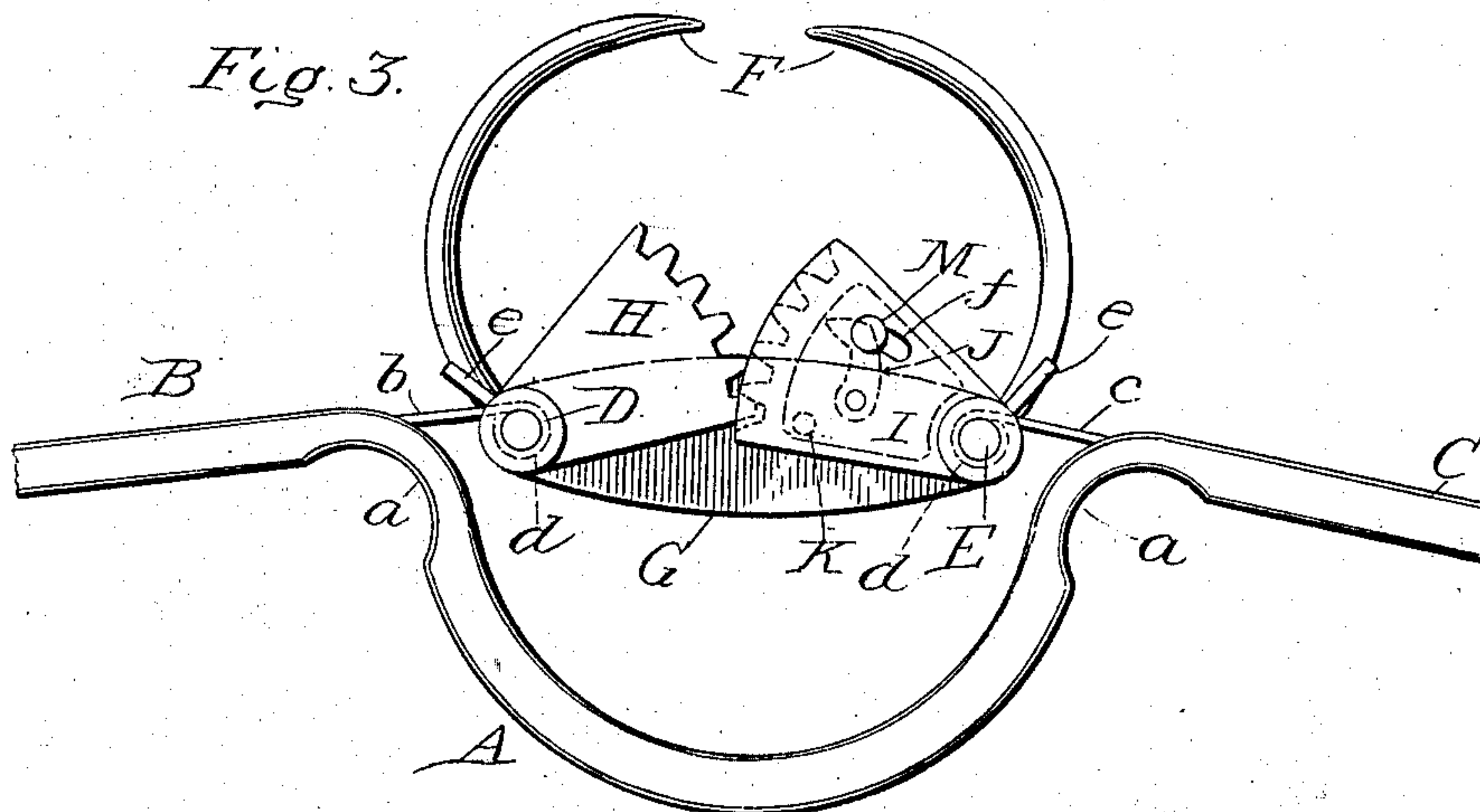


Fig. 4.

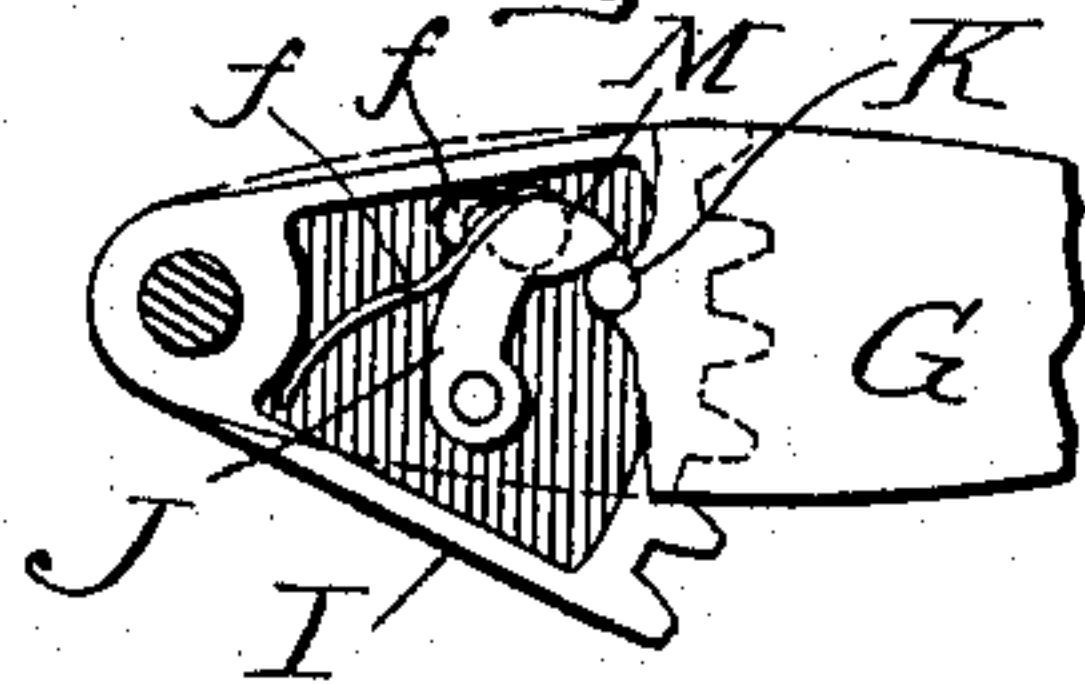
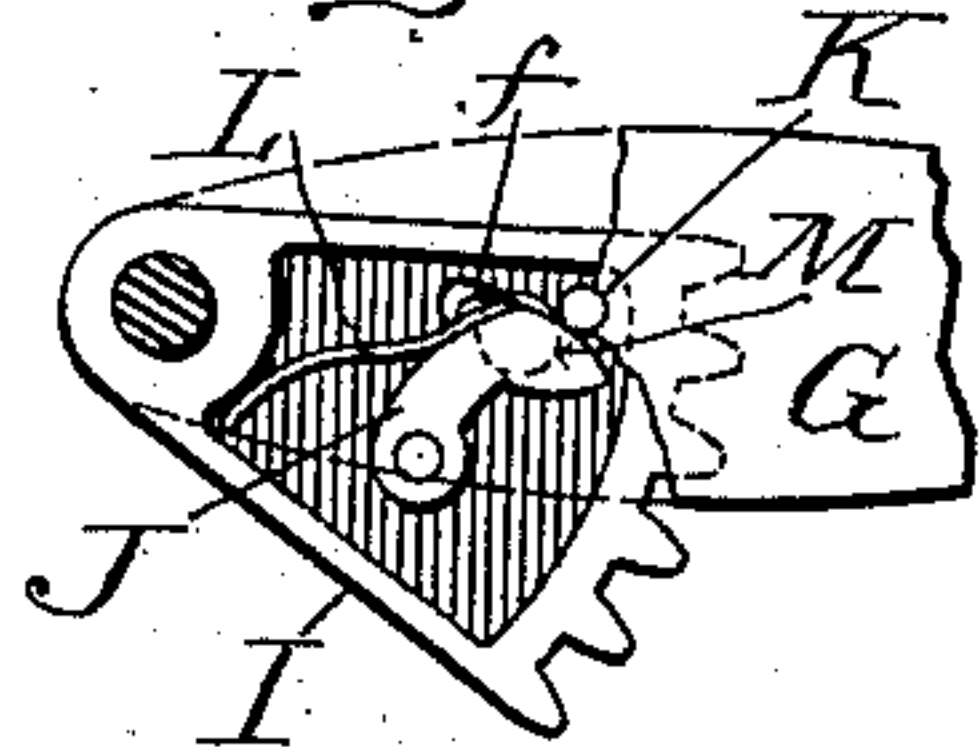


Fig. 5.



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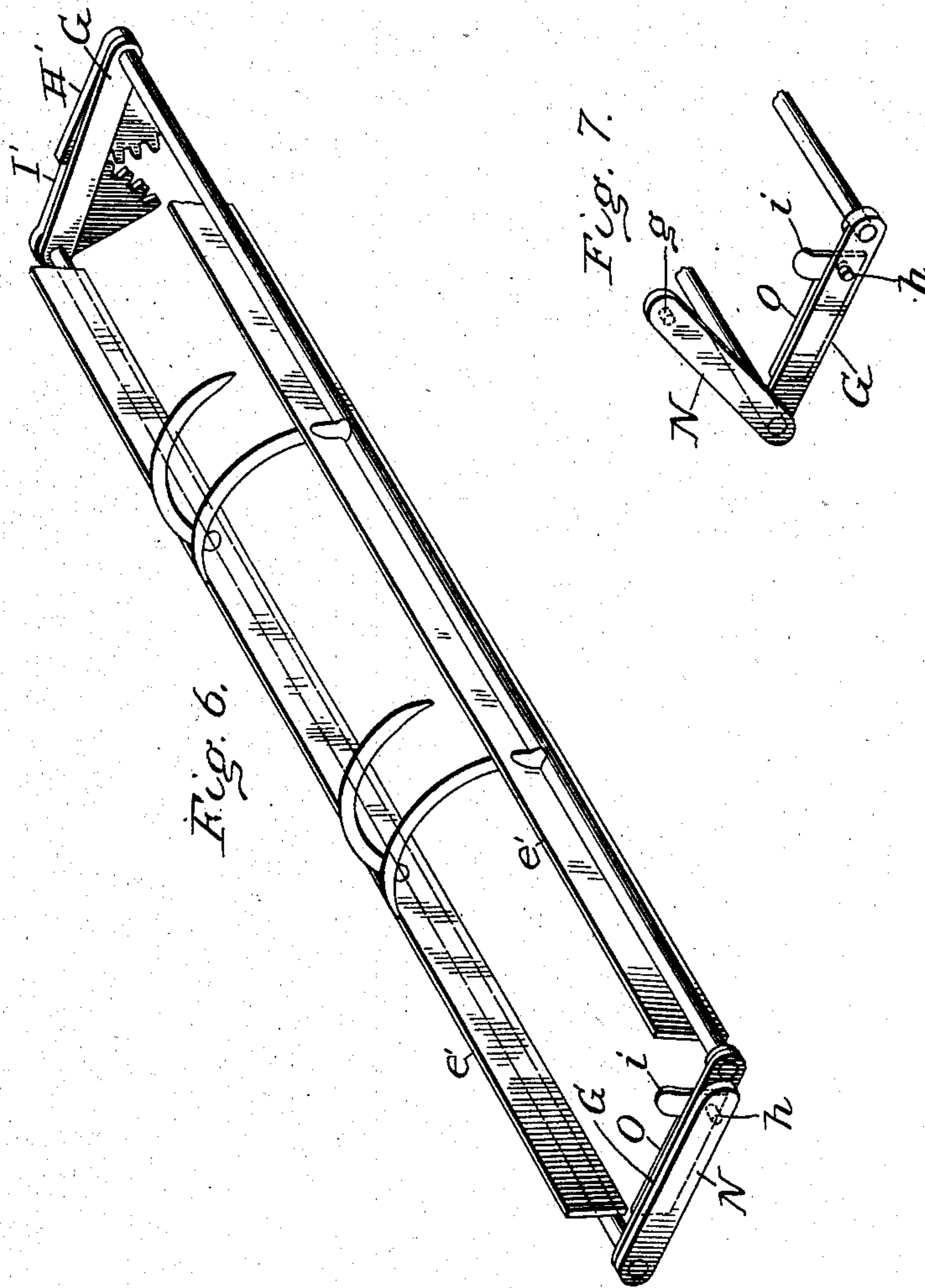
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APPLICATION FILED SEPT. 18, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

JOHN L. McMILLAN, OF SYRACUSE, NEW YORK.

## LOOSE-LEAF BINDER.

SPECIFICATION forming part of Letters Patent No. 757,336, dated April 12, 1904.

Application filed September 18, 1902. Serial No. 123,900. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. McMILLAN, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

This invention has reference to temporary binders or files and is in the nature of a modification of or improvement upon that described in an application filed in my name on the 2d day of June, 1902, and designated by Serial No. 109,982, which eventuated in Letters Patent No. 724,599, bearing date April 7, 1903.

The invention will be readily understood in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a binder or file embodying my invention, one cover-board being broken away for lack of space; Fig. 2, an end elevation of the same with the book thrown open but the leaves or sheets locked therein; Fig. 3, an end view of the impaling-pins rocked or thrown apart; Figs. 4 and 5, detail views of the lock employed for holding the impaling-pins in their locked or binding position or holding them open, as required; Figs. 6 and 7, perspective views illustrating a modified form of lock.

A indicates a curved back of the usual form of the back of a regularly-bound book, and B C cover-boards connected with the back A by the usual flexible or hinged portions *a*.

Carried by the cover-boards B C are two flat metal plates *b c*, the inner edges of which are coiled or curled to form barrels *d*, which overhang the hollow curved back A, as best seen in Fig. 1. These barrels serve to receive and support rock-shafts D E, which are provided at intervals with curved impaling-pins F, the curvature of which is such that as the shafts are rocked to throw their points toward and past each other the pins move in parallel or substantially parallel paths. The barrels are cut away at intervals, as seen in Fig. 1, to afford space and play for the impaling-pins, and they are further cut away at points alternating with the impaling-pins to afford space and play for short plates or arms *e*, carried by the rock-shafts D E. The purpose of these

arms *e* is to bear against the sheets held by the binder to determine the point at which said sheets shall bend over or fold back when the book or file is opened to inspect its pages and to apply pressure to the sheets or leaves above the rock-shafts and cause them to maintain a proper position and to fall readily into place when the impaling-pins are thrown together after a sheet has been inserted or removed.

As seen in Figs. 1, 2, 3, 6, and 7, the rock-shafts D E are connected at each end by cross plates or strips G, so that the back A is prevented from spreading, and the rock-shafts are maintained constantly in proper relative position. It is desirable that the rock-shafts be so connected as to cause the impaling-pins to move simultaneously and equally toward and from each other. With this purpose in view I provide each rock-shaft at one or both ends with toothed sectors H and I, respectively, concentric with the rock-shafts and meshing with each other, as seen in Figs. 1 to 6, inclusive. This toothed-sector connection gives easy and positive movement of either rock-shaft in unison with the other, so that the application of force to either will cause the two to move alike.

In order to lock the rock-shafts in position with their impaling-pins overlapping and extending through the sheets contained within the file or binder, I provide a dog or detent J, which is pivoted in a recess in one of the sectors and has a nose or free end adapted to engage beneath a stud or pin K, projecting from one of the plates or connecting-strips G, as shown in full lines in Figs. 4 and 5 and by dotted lines in Figs. 2 and 3, the connecting-plate being broken away to show the recessed inner face of the sector and stud K in Figs. 4 and 5. The locking dog or detent J is pivoted to the sector I, and its free end is urged toward the periphery of the sector by a spring L of any suitable form. A stud or button M, carried by a stem extending through a slot *f* and screwed or riveted into the detent J, serves to retract said detent and disengage it from the stud or pin K. The nose or free end of the detent is rounded or curved on its upper and lower faces, as plainly seen



in Figs. 4 and 5, and as a consequence it will as the sectors are thrown down from the position indicated in Fig. 3 to that indicated in Fig. 2 ride freely back over the stationary stud or pin K, when it will be at once thrown beneath said pin, as shown in Fig. 5. The curve of the upper face of the detent J and the relation of the pin K to the pivot thereof are such that upon passing beneath the pin or stud the detent J will lock the sector securely against movement about its center or axis, and by reason of the intermeshing of the sectors both will be thus held and will hold their respective rock-shafts.

The leaves or sheets to be bound are perforated near their inner edges to correspond in location and arrangement with the location and arrangement of the impaling-pins of the two rock-shafts, so that the leaves may be readily strung or threaded upon the impaling-pins and said pins thereafter caused to move toward and past each other and to enter the perforations made for them in the sheets or leaves. In this way the sheets or leaves will be engaged by both sets of impaling-pins and will be firmly held and prevented from escaping.

In Figs. 6 and 7 I have shown the same construction as is shown in the other figures, except that in lieu of the detent or locking device within the sectors I have provided a spring-detent at the opposite end of the rock-shafts from that at which the sectors are arranged and a lever or arm N by which to rock one of the shafts and through it to turn the other. So, too, I have shown continuous strips or plates *e'* in lieu of the shorter arms or plates *e* of Figs. 1, 2, and 3. The arm or lever N is provided with a perforation or recess *g* to receive a protruding stud or pin *h* of a spring-plate O, provided with a thumb-piece *i*. The stud *h* projects through and protrudes beyond the connecting end plate G and enters the recess *g* of the lever N when the latter is pressed down into alinement with the connecting end plate G. To facilitate this action, the end of the stud or pin *h* is advisably beveled. In this as in the prior construction above referred to the rock-shafts are lowered into and raised from the back in closing and opening the binder or file, owing to the attachment of the barrel-plates to the cover-boards or lids and the location of the rock-shafts within the back A. As a consequence the bound leaves or sheets are drawn well back into the cover in closing the book and are raised to the level of the lids or cover-boards when they are thrown open.

Having thus described my invention, I claim—

1. In combination with a cover comprising a back of permanent form, and cover-boards flexibly connected therewith; a pair of rock-shafts carried in bearings in said cover and provided with impaling-hooks and with intermeshing gears, substantially as described and shown.

2. In combination with a suitable cover having a back member of permanent form; two rock-shafts carried in supports therein; toothed sectors carried by and connecting said shafts; and a locking device for holding said shafts against turning.

3. In combination with a cover comprising a back of permanent form and cover-boards or lids; plates carried by said boards and overhanging the back; rock-shafts carried by said plates and provided with impaling-pins; sectors connecting said rock-shafts; and a locking device for holding said sectors and shafts against movement about their axes.

4. In combination with back A and cover-boards B, C, plates *b*, *c* carried by the said cover-boards; rock-shafts D, E carried by said plates and provided with impaling-pins F; connecting-plate G; sectors H, I carried by the rock-shafts D, E; and a detent carried by one of said sectors and adapted to engage with a pin or projection on the connecting-plate G.

5. In combination with a cover comprising a back of permanent form and cover-boards or lids; rock-shafts arranged at the inner adjacent edges of said lids; impaling-pins carried by said shafts; sectors connecting said rock-shafts; means carried by the shafts for clamping or holding the innermost edges of the leaves in position; and means for locking the shafts against rotation.

6. In combination with a cover comprising a back of permanent form and cover-boards or lids; rock-shafts arranged at the inner adjacent edges of said lids; impaling-pins carried by said shafts; arms *e* secured to the shafts, said arms being arranged to bear against the innermost edges of the sheets when the pins are thrown past each other; sectors carried by the rock-shafts; and means for locking the shafts against rotation.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN L. McMILLAN.

Witnesses:

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E. T. CARRINGTON.