

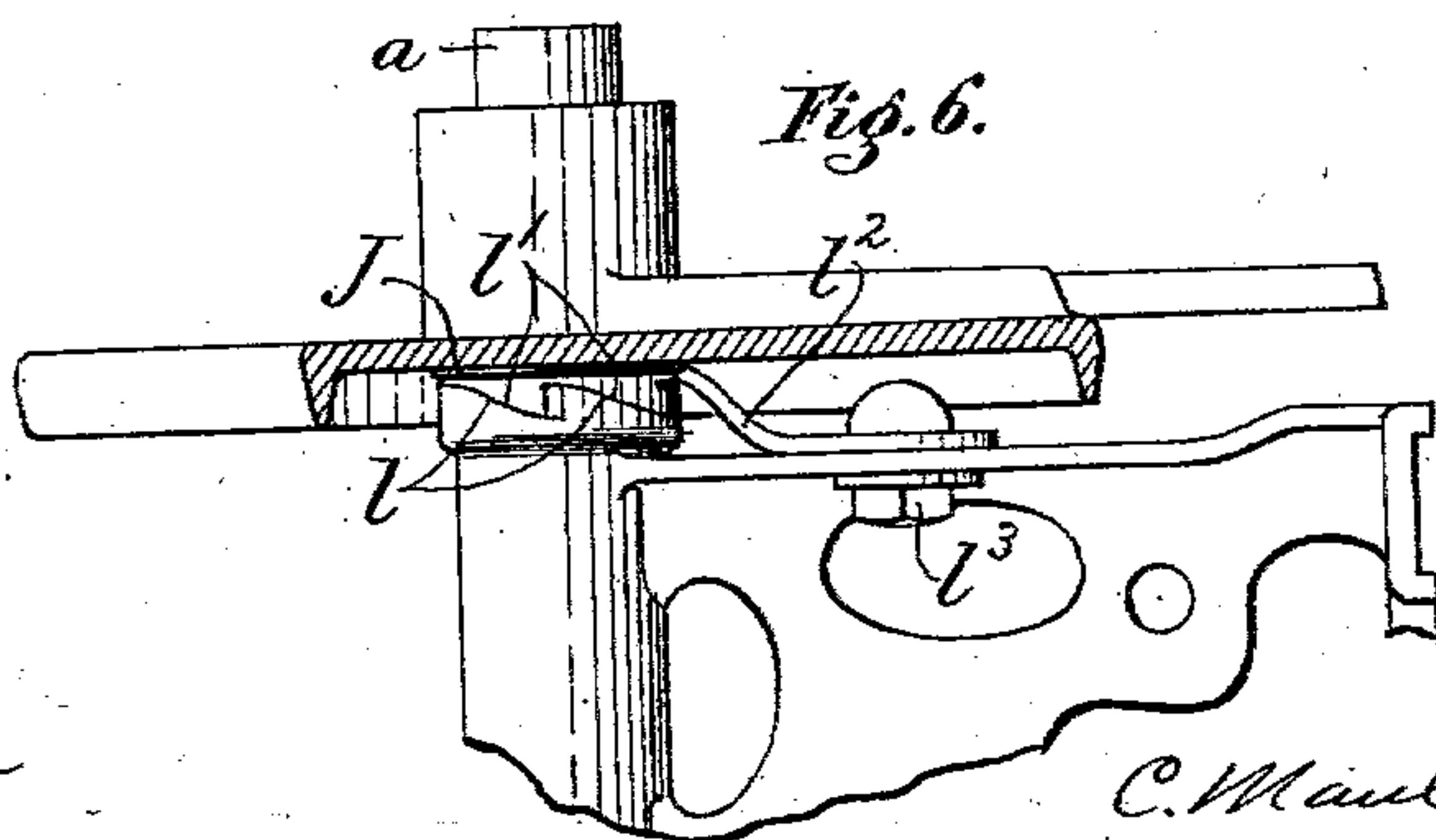
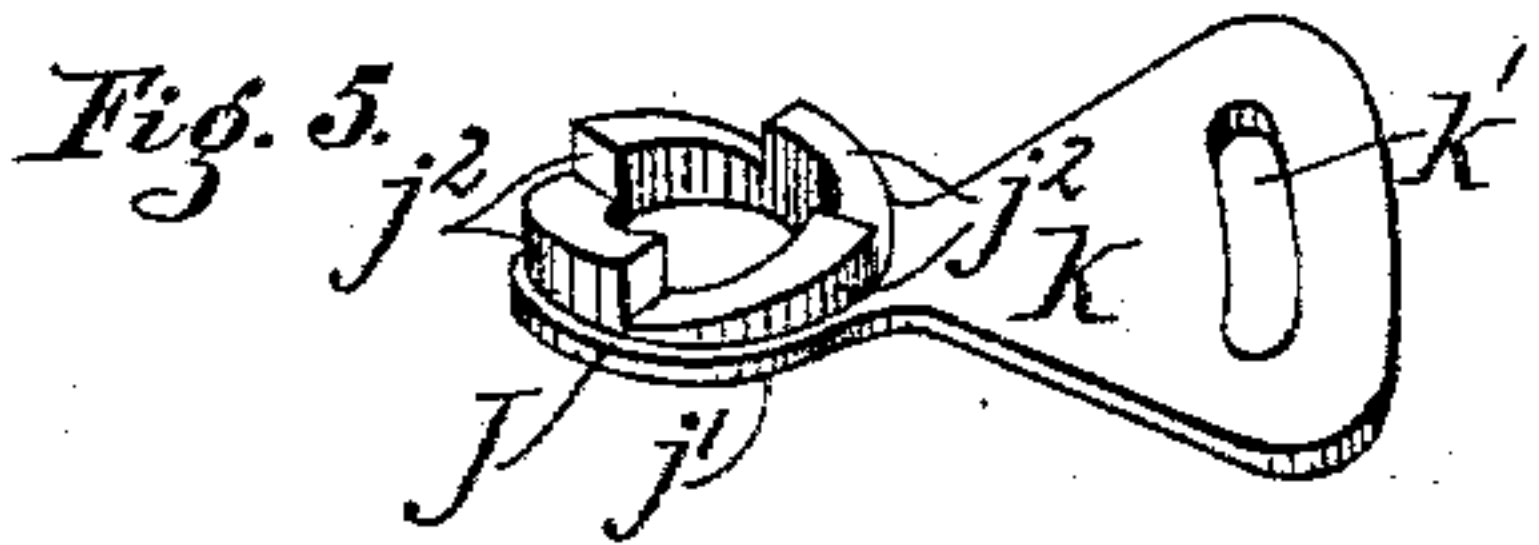
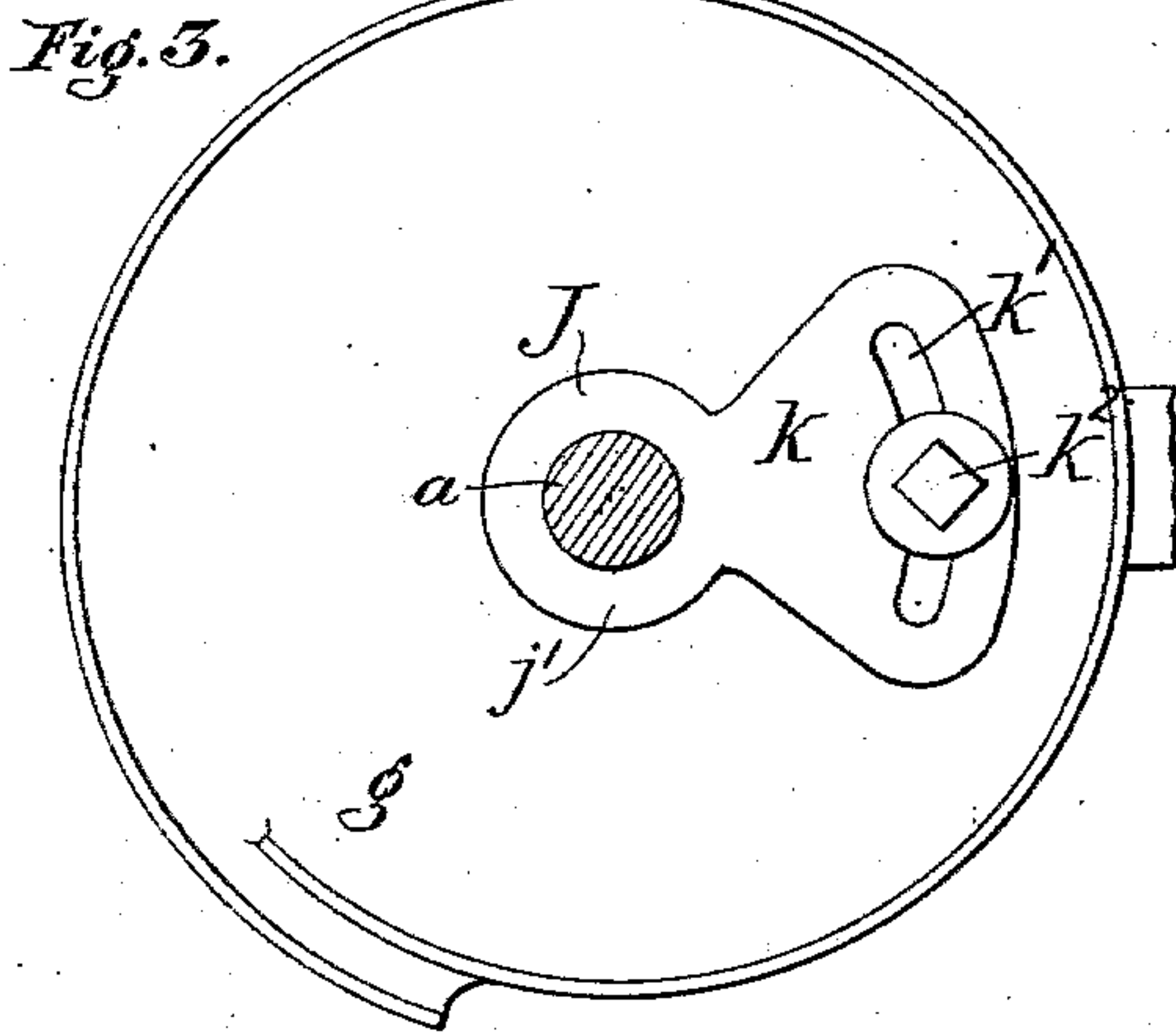
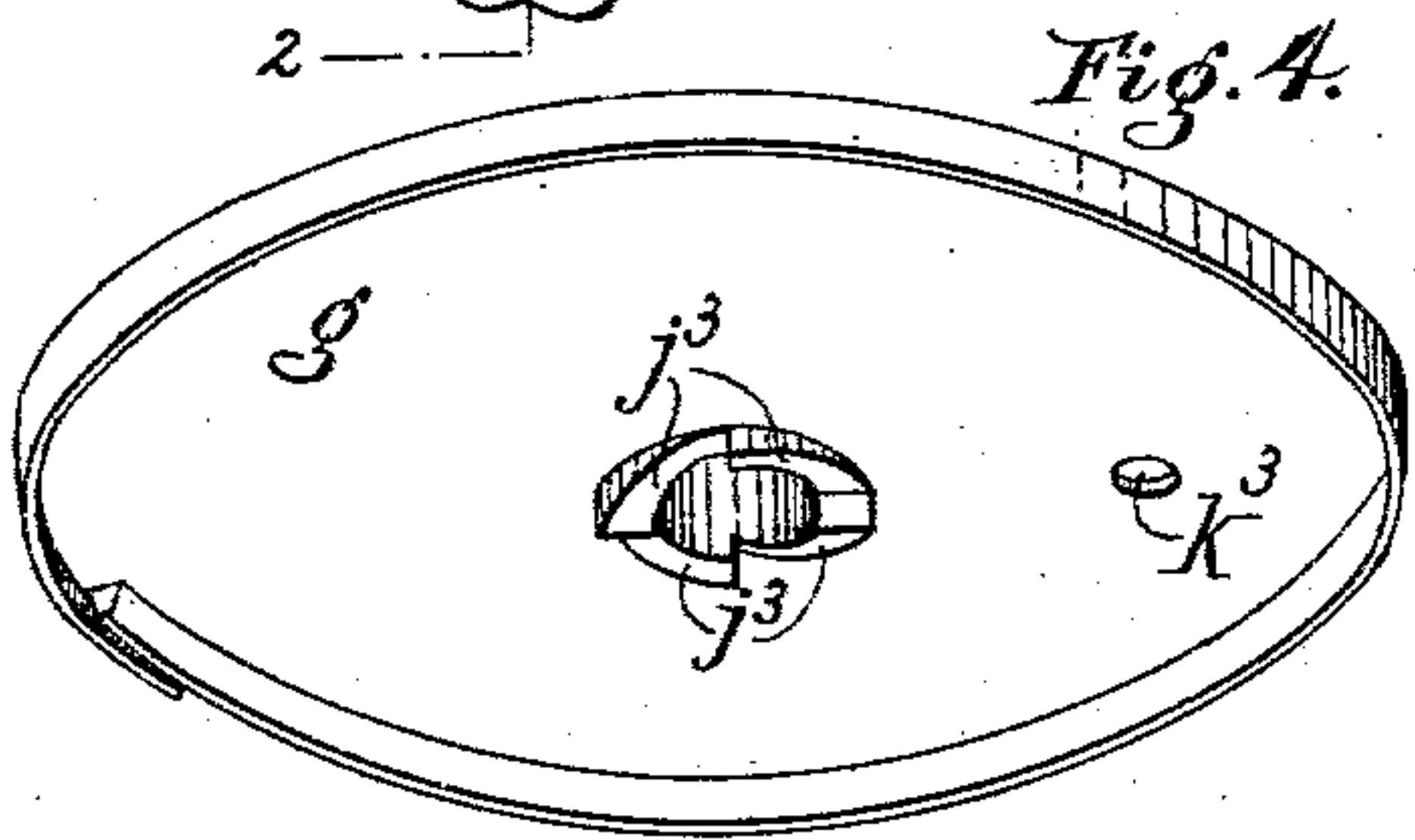
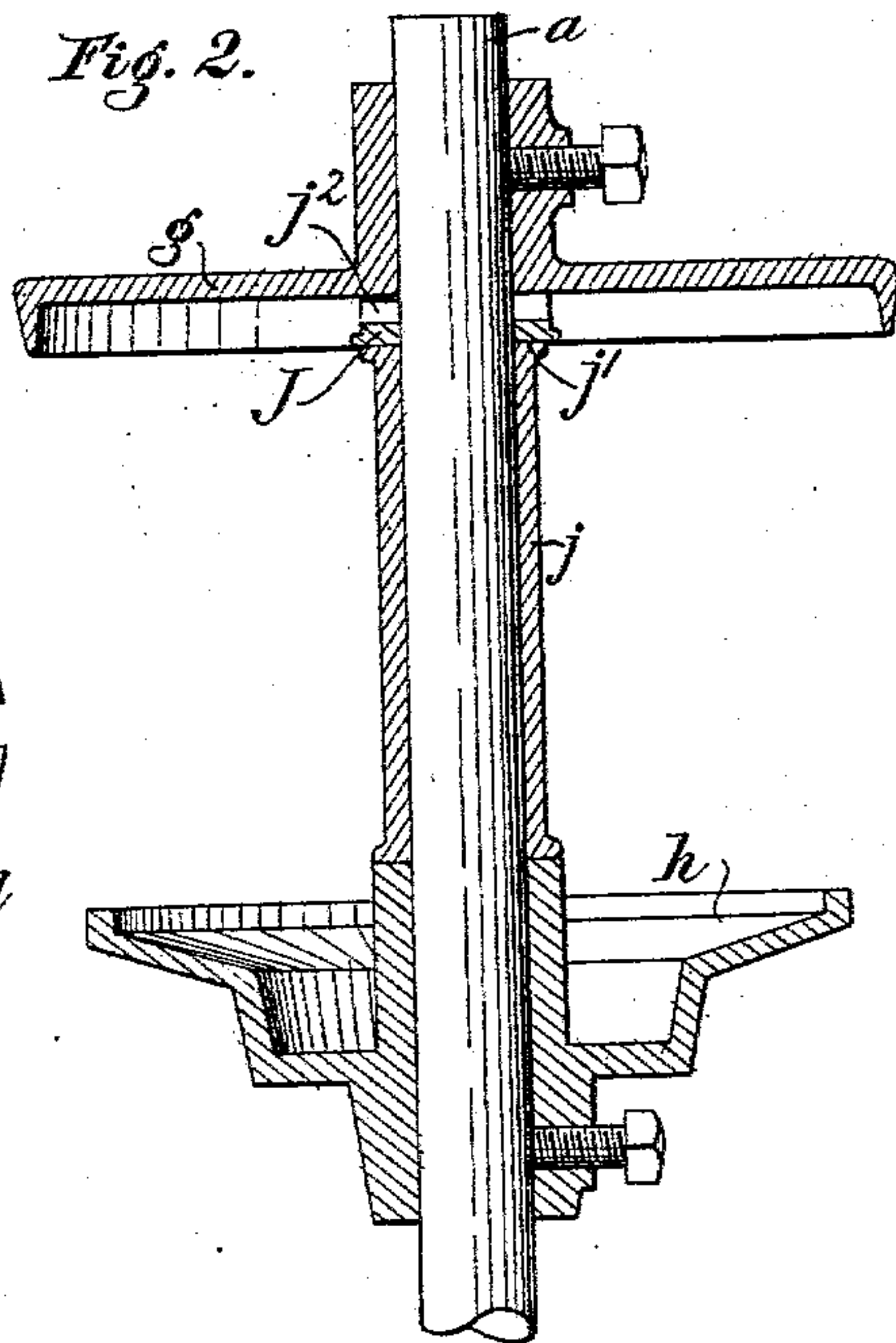
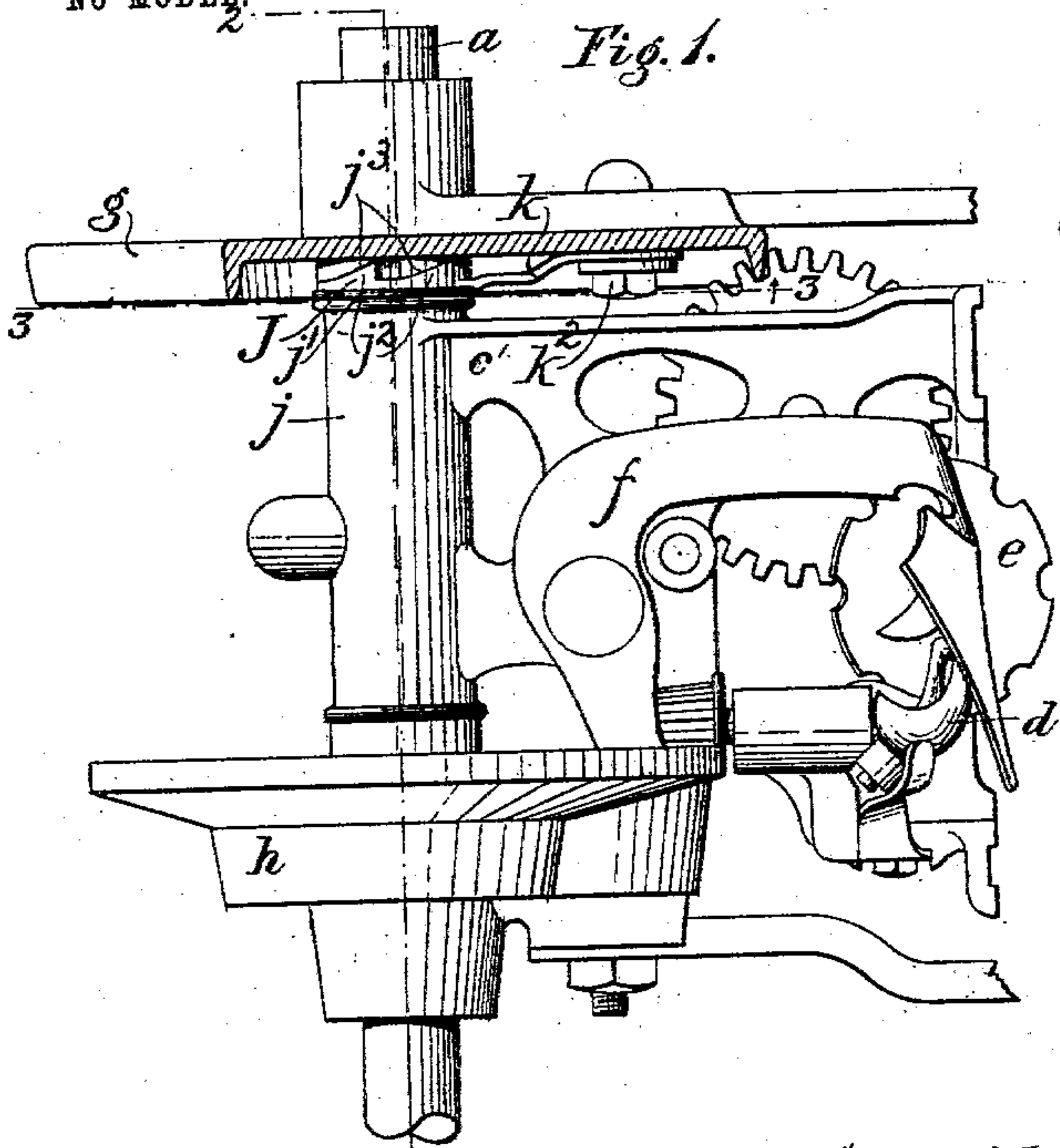
No. 752,912.

PATENTED FEB. 23, 1904.

C. MAUL.
GRAIN BINDER.

APPLICATION FILED JULY 19, 1902.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHRISTIAN MAUL, OF BATAVIA, NEW YORK, ASSIGNOR TO THE JOHNSTON HARVESTER COMPANY, OF BATAVIA, NEW YORK.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 752,912, dated February 23, 1904.

Application filed July 19, 1902. Serial No. 116,197. (No model.)

To all whom it may concern.

Be it known that I, CHRISTIAN MAUL, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented new and useful Improvements in Grain-Binders, of which the following is a specification.

This invention relates to a knotter mechanism for grain-binders.

The object of the invention is to provide a simple adjusting means for taking up wear, preventing rattle or movement between, and maintaining the driving parts for the knotter mechanism always in proper operative relation.

In the accompanying drawings, Figure 1 is a fragmentary elevation of a knotter mechanism provided with an adjusting device embodying the invention, the grip-wheel cam being broken away to show the adjusting device. Fig. 2 is a vertical section in line 2 2, Fig. 1. Fig. 3 is a section showing the grip-wheel cam and adjusting device in bottom plan. Fig. 4 is a perspective view of the grip-wheel cam. Fig. 5 is a perspective view of the adjusting-collar. Fig. 6 is a fragmentary sectional elevation showing a modified construction of the adjusting device.

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

The knotter mechanism is shown in the drawings in the relation it occupies in corn-binding machines; but the knotter and adjusting device are equally applicable to machines for binding other grains or material.

a represents the knotter-shaft, which is journaled in the usual knotter standard or bearing; *c*, the knotter-frame; *d*, the knotter; *e*, the grip-wheel; *f*, the knife-lever; *g*, the cam which drives the grip-wheel through interposed gearing, and *h* the cam which operates the knife-lever and is provided with a segmental gear for operating the knotter. The knotter-frame is loosely mounted and supported on the knotter-shaft between the operating-cams for the grip-wheel and knife-lever and is steadied or held from turning on the shaft by the usual brace-rod fixed to the knotter-standard and secured to the breast-

plate, which is attached to the knotter-frame. The two cams *g* and *h* are secured to the knotter-shaft on opposite sides of the knotter-frame by set-screws or in any other suitable manner. These parts are all arranged and operate in the usual well-known manner.

There is considerable wear between the knotter-frames and the operating-cams *g* and *h* for the grip-wheel and knife-lever, and the parts soon become loose and rattle or move relative to each other, so as to be detrimental to the proper operation of the knotter mechanism. To take up wear, avoid this movement of the parts, and hold the same in their proper relation, an adjusting device is interposed between one of the cams and the knotter-frame.

In the construction shown in the drawings this device is in the nature of a collar or plate *J*, which surrounds the knotter-shaft between the grip-wheel cam *g* and the adjacent end of the bearing *j* for the shaft on the knotter-frame. One end face *j'* of the collar is flat or plain and bears against a flat face on the end of the bearing, and the opposite end of the collar is provided with one or more inclined or wedge-shaped projections *j''*, having long inclined faces, which bear against corresponding inclined faces *j'''*, formed in the adjacent end of the hub of the grip-wheel cam or other suitable part secured to the knotter-shaft. When the collar is turned for a partial revolution on the shaft, the inclined faces of its projections will slide on the inclined faces of the cam-hub and force or wedge the cam and bearing apart, forcing the opposite end of the latter against the adjacent end of the hub of the knife-operating cam *h*. The collar is provided with a projecting arm or part *k*, which is secured to the grip-wheel cam in any suitable manner. As shown, the outer portion of the arm is slotted at *k'* concentric with the collar. A bolt or the like *k''* is passed through said slot and through a bolt-hole *k'''* in the grip-wheel cam. When the bolt is loosened, the collar can be turned by its arm the necessary distance to give the desired adjustment, and it is again secured by tightening the bolt. Thus any wear or looseness between the knotter-frame and either cam is quickly and easily taken up with-

out the necessity of independently adjusting each of the cams on the knotter-shaft.

An obvious reversal of the adjusting means is to provide the end of the shaft-bearing on the knotter-frame with inclined faces l and reverse the collar, so that its inclined faces l' cooperate with the inclined faces on the shaft-bearing. In this case the end of the cam-hub adjacent to the adjusting-collar is made plain or flat, and the arm l^2 of the collar is secured by a bolt l^3 or otherwise to a part of the knotter-frame. Such a construction is shown in Fig. 6.

I claim as my invention—

1. The combination with a knotter-shaft, and a knotter-frame, of a movable device arranged adjacent to said frame and held against movement relative to said frame in a direction longitudinally of said shaft, and means acting when said device is moved to cause a relative movement between said frame and said shaft, substantially as set forth.

2. The combination of a knotter-shaft and a knotter-frame, of a movable device arranged between a part of said frame and a part on said shaft, cooperating means on said device and one of said parts acting when said device is moved to cause a relative movement between said frame and said shaft, and means for holding said device in adjusted positions, substantially as set forth.

3. The combination with a knotter-shaft, a part secured to said shaft against longitudinal movement, and a knotter-frame, of a collar

mounted to turn on said shaft between a part on said frame and said part secured to said shaft, an inclined face on said collar, an inclined face on one of said parts which is engaged by the inclined face on said collar, and means for holding said collar in adjusted positions, substantially as set forth.

4. The combination with a knotter-shaft, a part secured to said shaft against longitudinal movement, and a knotter-frame of a collar loosely surrounding said shaft between said frame and said part secured to said shaft, a flat face on said collar bearing against a flat face on said frame, one or more inclined faces on said collar, cooperating inclined faces on said part secured to said shaft, and means for holding said collar in adjusted positions, substantially as set forth.

5. The combination with a knotter-shaft, a knotter-frame, and a knotter mechanism including a cam secured to said shaft, of a collar loosely surrounding said shaft between said frame and said cam, one or more inclined faces on said collar, one or more cooperating inclined faces on said cam bearing against said inclined face on said collar, and means for securing said collar to said cam, substantially as set forth.

Witness my hand this 17th day of July, 1902.

CHRISTIAN MAUL.

Witnesses:

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FRANK E. HOWE.